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PAPER TRADE JOURNAL

Vol. 109 JULY 6, 1939 No. 1

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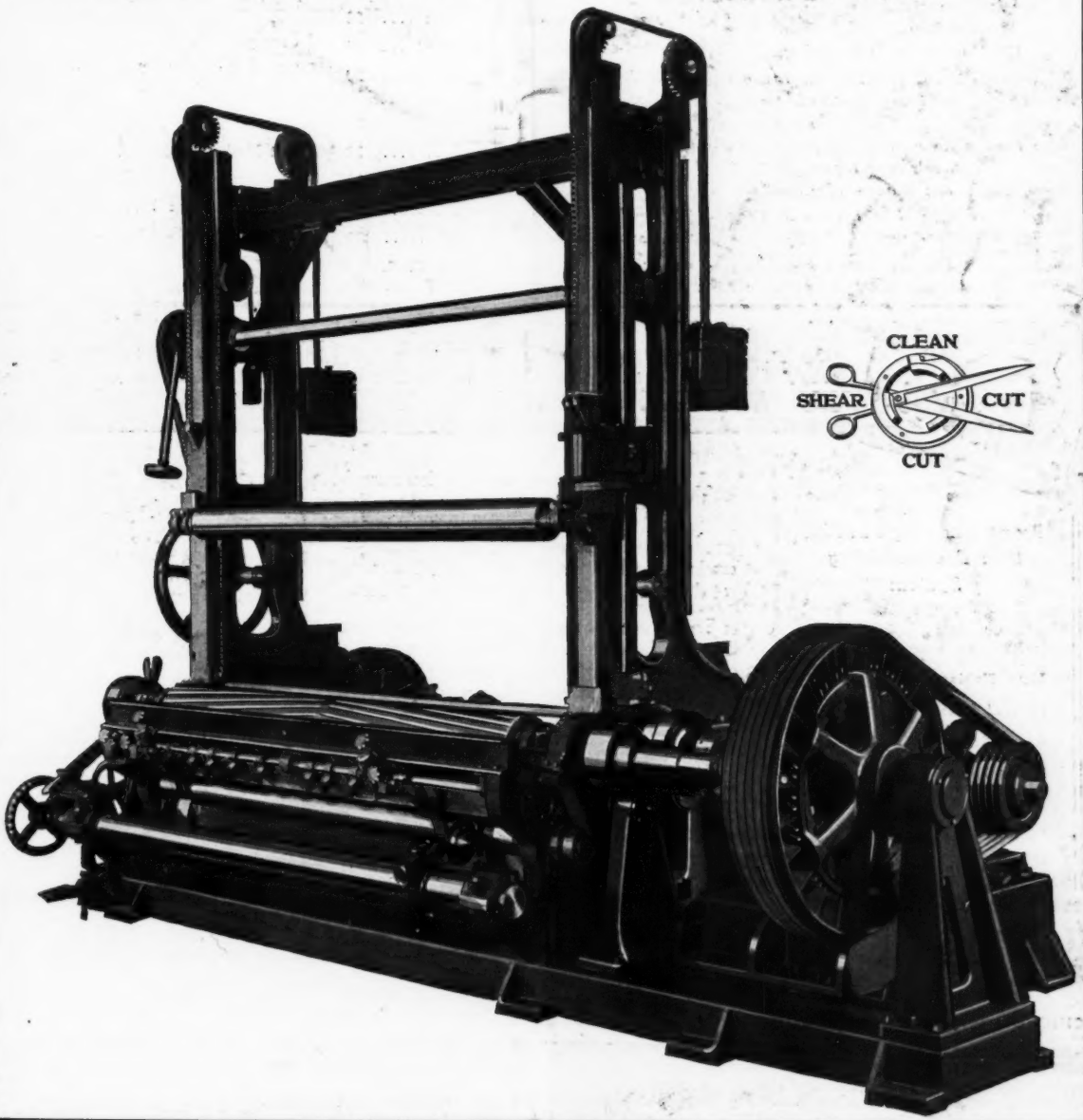

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Standard

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PAPER TRADE JOURNAL

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Falls Pulp and Paper Co. Properties Sold

Thomas F. Millane, Attorney of Milwaukee, Wis., Purchases Properties of Falls Pulp & Paper Co. of Oconto Falls At Sheriff's Sale and Mill May Continue Operations —Plan To Assure Pulp Wood Supply—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 3, 1939—Properties of the Falls Pulp and Paper Company, Oconto Falls, Wis., were sold at a sheriff's sale June 28 for $14,157.27 to Thomas F. Millane, attorney of Milwaukee, Wis., as trustee. He represented four creditors who held mechanics' lien judgments totalling $13,845.62, as follows: Ellsworth Pipe and Supply Company, Milwaukee, $5,837.08; Snapp Electric Company, Wausau, $1,268.28; W. S. Patterson Company, Appleton, Wis., $516.05, and C. R. Meyer & Sons Company, Oshkosh, Wis., $6,224.21.

The sale was ordered several months ago by Circuit Judge Arnold F. Murphy, but was postponed to enable the company to reach a settlement with creditors.

Clayton Ewing of Green Bay, Wis., president of the company, could not be reached for a statement, but there were intimations the plant would continue operations. Attorney Millane was the only bidder. The property sold includes a water power dam at Oconto Falls.

Plan to Perpetuate Pulp Wood Supply

A review of the steps taken to perpetuate the pulp wood supply for the paper mills as well as the timber industry in general was given the Society of American Foresters and Ecologists at a meeting at Iron Mountain, Mich., June 23, preparatory to a tour of operations at Goodman, Wis., and other points.

The explanatory address was given by R. B. Goodman, president of the Goodman Lumber Company, a director of the Northern Paper Mills, Green Bay, Wis., and chairman of the Wisconsin Conservation Commission.

Cutting of timber of any value was destructively carried on, Mr. Goodman said, to evade heavy taxes, until the enactment in 1927 of the forest crop law which imposed a severance tax and saved the lands from tax exploitation. This adjustment and the reorganization of fire control to a program of prevention, detection and suppression for 12 million acres of forest region changed the situation as to forest management. Now the timber owners have adopted woods practices for the protection of young timber, and many of the larger operators have developed selective cutting. The change came rather late, Mr. Goodman remarked, because more than two-thirds of the forest lands of northern Wisconsin had been cut over and burned over and dropped for taxes.

Foresters found a further remedy in an acquisition program under an enabling act passed by the State of Wisconsin which permitted the federal forest service to obtain up to two million acres. A cooperative plan was also developed by the Wisconsin Conservation Commission with the counties for the management of a large part of the cutover areas which reverted back because of delinquent taxes.

Mr. Goodman pointed out that in six counties through which the society members would pass, they are managing more than 500,000 acres. Ninety per cent of this region, he said, is under good forest management in public, farm and industrial ownership. The area now supports a resident population of 107,000 persons, and zoning laws prevent isolated settlement and sub-marginal farming.

Action Postponed on Reservoir Bill

Action was postponed by the Wisconsin Senate last week on the bill which would grant the Wolf River Reservoir Company a charter to construct a reservoir on the upper Wolf River at Lily, Wis., to store 4 billion cubic feet of water, gathered in the flood season of spring, to be released during summer dry spells to increase the flow of the Fox River for the benefit of paper mills and other water power users. Vote was delayed when Senator Kresky of Green Bay, Wis., said he wanted to submit an amendment guaranteeing that the charter would never be transferred to any other company such as a utility firm that the reservoir the company proposes to build will never be used for power generation purposes, and that the site will not be used for a hydro plant.

Senator Kresky is interceding for the Menominee Indian tribe, through whose reservation the Wolf River flows. Surveys have shown there are five sites within the reservation where power dams might be built in the future, and he claims such projects would be impractical if the flow were controlled further up the river, and if the ultimate scheme were to build a power plant at the Lily site.

The reservoir company has the support of counties along the lower river, however, and all through the Fox River Valley, because of the elimination of

(Continued on page 22)

Midwest Paper Trade Reports Summer Lull

Demand Declines In Many Grades of Paper Under Influence of Three-Day Holiday, With Sales of Kraft and Groundwood Papers Fair — Earl Martin Heads Bradner Smith — SAPI On Golf Outing — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 3, 1939—Faced with a three day holiday, the paper industry is beginning to show definite signs of summer lethargy. Demand has dried up to a noticeable extent with buyers obviously adopting the general policy of watchful waiting. Fair demand is reported in the kraft market although kraft executives locally continue to bemoan the inability of the industry to get fair prices for their product. Heavy production, labor and overhead costs are not being matched with prices that will bear the burden and show a fair profit according to local commentators.

Bond Papers Strong

Bond papers are structurally strong as far as the market itself is concerned though demand has slackened during the week just passed and a listlessness is reported as quite noticeable. Book and cover papers gave little evidence of any changes during the week though the former, in particular, is said to be holding well from a market standpoint. Groundwoods were in fair demand though conditions were spotty and buying interest somewhat curtailed. Newsprints indicated no change. Specialties were pointing to some briskness expected in early fall while the board market held firm. Waste papers continued soft.

Martin Heads Bradner & Smith Co.

Official notice has been given of the selection of A. R. Martin as president of Bradner Smith & Company to succeed R. S. Bull, deceased. While the informal word had gone out to the trade some time ago, the formal announcement was made just prior to a banquet tendered to Mr. Martin on the occasion of his twenty-fifth anniversary of service with the well known Chicago jobbing firm. Mr. Martin came with Bradner Smith & Company in 1914 as a bookkeeper, was soon elevated to the job as assistant credit manager, thence to the credit managership and finally to the position of secretary. Shortly thereafter he was also given the ranking of vice presidency which he held until his recent appointment as president. Chicago paper executives have often commented on the close association between Mr. Martin and his predecessor and it is believed that policies of the company will remain virtually as in the past due to the cooperation which extended over a period of years between the new president and Mr. Bull.

Salesmen Enjoy Second Golf Outing

Fifty-two salesmen and their guests enjoyed the second of the summer golf outings staged by the midwest division of the Salesmens Association of the Paper Industry held at the Park Ridge Country Club on Friday, June 23. Lunch, dinner and golf made up the program staged under the direction of George Craft, golf chairman, with the assistance of Jim Coy, song impresario, and Fred Whitely, impromptu master of ceremonies. F. Haggerty Jr., found his 75 score sufficient to win the low gross prize while P. H. Barkley of the C. L. Barkley Company won blind bogey honors. Other prize winners were as follows: low net, 17 and under, Spence Heberling, Dwight Bros. Paper Company; low net, 18 and over, Joe Meek, PAPER TRADE JOURNAL; second low net, Joe Shaughnessy, Graham Paper Company; third low net, Herman Berge, Appleton Coated Paper Company; low net, first nine, Frank Prentiss, Hollingsworth & Whitney; low net, second nine, Bert Lewis, Nicolet Paper Corporation; low putts, first nine, G. J. Frelinger, Butler Paper Company, low putts, second nine, F. Brucker, Hartford City Paper Company; high gross foursome, Gene Todd, Bermingham & Prosser, Red Barrie, Oxford Paper Company; Jack Taylor, Mead Sales Company and Bob Roueche, Mead Sales Company; low net foursome, Bert Fisher, Bergstrom Paper Company; Ken Lamont, Blundon & Lyon, Hank Fulton, Blundon & Lyon and F. Haggerty, Haggerty Paper Company; low putt foursome, A. S. Harmon, Pilcher-Hamilton, F. Brucker, Hartford City Paper Company, I. L. Myers, Pilcher-Hamilton and Frank Foley, Blandin Paper Company. The next outing will be staged Friday, July 21, at the Bob-O-Link Golf Club.

Garden City Envelope Co. Expands

The Garden City Envelope Company, well known Chicago envelope manufacturers, has recently taken steps to insure sufficient room for additional expansion. The firm, located at 500 S. Peoria street, has acquired a one story building at 3923 W. Van Buren street and an option to purchase an adjoining one story modern building which insures plenty of room for a development which is believed certain to come. W. F. Hammel is president of the company.

Beier Heads Paper and Twine Club

The president of the Chicago Paper Association, local organization of coarse paper jobbers, also became the head of the Paper & Twine Club according to a recent announcement that Earl Beir of Beir & Company had been elected president of the latter organization at the annual meeting held the week of June 20 at Lake Wawasee Indiana. Mr. Beier is one of the most popular and well grounded executives in the industry and his election as head of the Paper and Twine Club augurs well for the expansion of the industrial training program planned by that organization. In fact, the educational program of the Club was a topic of major discussion at the annual convention where the Industrial Training Corporation reports outstanding interest and a tentative enrollment of over 1200 students in the various courses. The price of the course is reported to have been reduced, thus permitting the industry to finance its own project without recourse to outside assessments.

Financial News of Pulp and Paper Industry

Start Campaign For Underwriting Timber For Proposed Brownsville Mill—Dennison Recapitalization Effective July 1 — Frazer Opens Stock Transfer Registers At Edmundston—Bemis Is Awarded $50,000 Damages.

New York Stock Exchange

High, Low and Last for the Week Ending July 5, 1939

	High	Low	Last
Armstrong Cork Co.	36	34	36
Celotex Corp.	11⅜	10⅜	11⅜
Certain-Teed Products Corp.	7	6½	7
Certain-Teed Products Corp., pf.	28½	27	28½
Champion Paper & Fibre Co.	18	17½	17½
Congoleum-Nairn Co.	22½	21⅜	22½
Container Corp. of America	9½	9⅛	9⅜
Continental-Diamond Fibre Co.	6⅛	6	6⅛
Crown-Zellerbach Co.	9⅜	9⅛	9½
Crown-Zellerbach Co., pf.	80	79½	79½
Flintkote Co.	18¾	17⅜	18½
Robert Gair	2¼	2⅛	2⅛
Robert Gair, pf.	8	8	8
International Paper & Power	7¾	7	7¾
International Paper & Power, pf.	30	27½	30
Johns-Manville Corp.	70½	66½	70½
Johns-Manville Corp., pf.	128	127½	127½
Kimberly Clark Corp.	25¼	24¼	24¼
Masonite Corp.	39½	38¼	38½
Mead Corp.	7	7	7
Mead Corp., pf.	58	58	58
Ruberoid Co.	20	20	20
Scott Paper Co.	50¼	49⅝	50¼
Sutherland Paper Co.	26	25¼	25½
Union Bag & Paper Corp.	7½	7	7¼
United Paperboard Co.	4⅜	4	4
U. S. Gypsum Co.	85	81	84½
U. S. Gypsum Co., pf.	176	176	176

New York Curb Exchange

High, Low and Last for the Week Ending July 5, 1939

	High	Low	Last
Great Northern Paper	36	35¼	36
St. Regis Paper Co.	2⅛	2	2
Taggart Corp.	2⅞	2¼	2⅞

Underwriting Timber for New Mill

A recent press dispatch from Corinth, Miss., stated that "former Gov. Gordon Browning of Tennessee will come to Corinth Friday for a conference with the industrial committee of the Corinth Association of Commerce relative to starting a campaign for underwriting purchase of timber lands to furnish timber for the proposed pulp mill to be located near Burnsville.

"The industrial committee personnel will be supplemented by five other interested citizens of the city whose appointment was authorized at a meeting held last night at the Association of Commerce offices, following an explanation of the financial setup of the mill by Browning.

"A large attendance was on hand to hear the ex-governor of Tennessee explain the proposition which calls for construction of a five million dollar paper mills in this section to manufacture paper from slash pine timber.

"While details of the entire matter are not ready to be publicized it is understood that the underwriting of at least 40,000 acres of additional timber land is desired by those backing the project. When this matter has been disposed of the syndicate will then float an RFC loan for two and a half million dollars and put up a sufficient amount of money to match the local land underwriters, the machinery concerns will also take a part of the stock and the construction work will begin. It is estimated that at least one year will be required in building the project.

"Engineers will select a site for the mill, either at a point a short distance south of Burnsville or on Yellow Creek, depending on availability and accessibility of the sites to rail and water facilities, Gov. Browning stated last night.

"It was pointed out at the meeting last night that the mill would be of 50,000-ton capacity per year and that the entire output would be contracted for by newspapers throughout the South, making for secure, full-time operation once the mill was opened. Five years is estimated by those in charge of the promotion work, to pay the entire indebtedness of the concern."

Dennison Recapitalizing

The Dennison Manufacturing Company is notifying holders of its debentures, preferred and Class A stock and of interim optional receipts that the plan of recapitalization has been declared effective as of July 1.

Under the plan there will be given for each share of preferred and accumulated dividends one share of prior preferred stock, four shares of "A" common and $6 in cash; each share of Class A stock will receive one and a quarter shares of "A" common stock; for each $10 face amount of optional receipts there will be issued one and a quarter shares of "A" common.

Fraser to Transfer Stock

MONTREAL, Que., July 3, 1939—Fraser Companies, Limited, have opened registers at Edmundston, N. B., for registration and transfer of common shares and voting trust certificates. Previously this was only possible at Montreal where the Montreal Trust Company is the registrar.

Shares may now be transferred at the point of registry, Montreal or Edmondston, but change from one registry point to the other can be arranged by means of a discharge warrant.

Bemis Bag Co. Awarded Damages

INDIANAPOLIS, Ind., July 3, 1939—The Bemis Bag Company, owner of a large strip of land along White River here, has been awarded damages of $50,000 by the city for the proposed construction of a flood control project along the west bank of the river, which will take some of the company's land. The river is to be deepened and widened.

Eastern Reports $36,949 Profit

The Eastern Corporation (Formerly Eastern Manufacturing Company) reported for the March quarter a net income of $36,949, against $50,526 earned in same quarter a year ago.

Determination of the Wetting Rate of Pulp by Sodium Hydroxide Solutions

By J. Seiberlich[1] and Y. T. Chao

Abstract

This paper deals with a method for measuring the relative "rate of absorption" of pulp sheets. The term "absorbency", however, has been defined by Margaret, Preston and Matthew in connection with textiles to refer both to the properties of drawing up water and to the per cent of water held.

Three physical phenomena have been observed when a piece of pulp sheet is steeped in an alkali or acid solution. First of all, it requires a certain interval of time to wet a certain area of the sheet. Secondly, there is a certain amount of water held up by the sheet, and finally, deformation, such as swelling or shrinkage of the pulp sheet, takes place.

In the nitration industry, the question of whether there is any possibility of using the pulp directly in the original sheet form instead of shredding it before use, is still waiting for an answer. In the preparation of alkali cellulose, the absorbing power of the pulp sheet is also of prime importance. For these purposes, various methods have been employed to test the properties of the pulp sheet. Unfortunately, there appears in literature, singularly few records dealing with this matter.

For textile testing, a few methods which relate to the rate of absorption are in common use. The first one is to place a specimen attached to a sinker in the liquid and to take the time required for sinking for comparison. Another method is to attach the sample and sinker to a spring or to the arm of a balance and to determine the time required to come to a constant weight during sinking. Another test used is to note the time required for a given volume of solution to wet and flow through a sample of standard size. Another is to put a drop of solution on the sample and allow the drop to be absorbed and to spread out. The time for absorption and the diameter of the spread are measured. Another is to measure the time required for a solution to rise to a certain height in a strip of pulp sheet when the latter is suspended vertically with the lower end immersed in the liquid. For pulp sheet testing no standard method so far is known. Because there exist some common similarities between textile and paper, the writers chose among the above mentioned methods the rising height method for carrying out the tests. This method has already been briefly described in patent literature, English patent 455,657.

[1] Member TAPPI, Chemist, 49 Longwood Ave., Brookline, Mass.

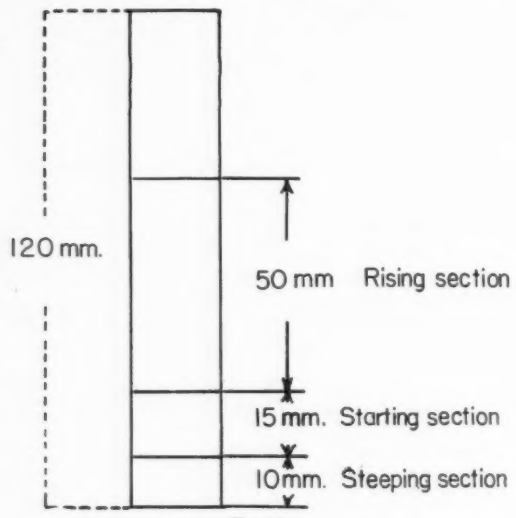


FIG. 1.

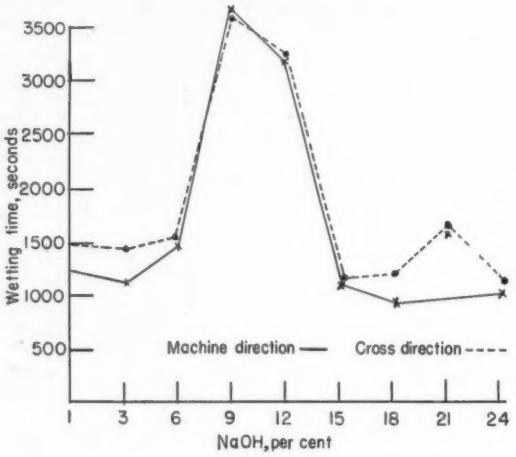


FIG. 2.
Normal Sulphite Pulp

Experimental

The testing samples were cut into rectangular strips (Fig. 1.) of standard size, the dimensions of which were fixed arbitrarily at 12 cm. in length and 2.0 cm. in width. At one end of the strip, at the distance of 1.0 cm. from the end, a pencil line was ruled. For many purposes this distance should be 2.0 cm. to take care of shrinkage in concentrated solutions. Then a similar line was drawn 1.5 cm. from the first. The area bounded by the first and second lines was called the starting section. Then lastly, a third line was made at the distance of 5.0 cm. from the second line. This 5.0 cm. section was called the "rising height section". The remainder of the strip 4.5 cm. long with a hole punched in the center, served for hanging the sample. The strip was then hung on a hook with the section to be submerged at the bottom. The hook had a long stem attached to a cork which was clamped to an iron stand.

The testing solution was put beneath the hook. The strip was adjusted so that the upper mark was at exactly the same level as the surface of the testing

solution by means of pushing or pulling the hook through the cork. The lower end of the strip was then put into the solution. At the moment when the meniscus rose just to the upper mark of the starting section, a stop watch was started. After the meniscus travelled through the 5.0 cm. rising height section to reach the upper mark of that section, the stop watch was stopped and the interval in seconds was taken as the relative wetting rate of the sheet. If the wet boundary appeared to be irregular, the average on the critical line would be considered the right place for timing. In order to see the wet section better, a lamp was put behind the strip.

Strips of samples were cut along the machine direction of the sheet, that is, with the machine direction parallel to the long axis or set vertically. Samples of testing strips of each kind of material were prepared from at least three different sheets of each and the average data were considered to be the representative result.

A stock solution of NaOH containing 500 g. in 1000 cc. of water was made. Solutions of the desired strength for the tests expressed in g. solid per 100 cc. of the solution were obtained by diluting calculated amounts of the stock solution from a burette. A testing solution of 200 cc. was placed in a 250 cc. wide mouth, glass-stoppered bottle at room temperature (24 deg. C.), and kept ready for use.

The pulp samples, to which this absorptivity method was applied, were:

Normal sulphite pulp with about 88 per cent alpha cellulose content
Purified sulphite pulp with about 91 per cent alpha cellulose content
Alpha pulp with over 98 per cent alpha cellulose content

The absorptivity test in water was carried out with these three samples and the following figures were obtained:

	Machine direction	Cross direction
Normal sulphite pulp	726 seconds	1265 seconds
Purified sulphite pulp	507 seconds	614 seconds
Alpha pulp	32 seconds	39 seconds

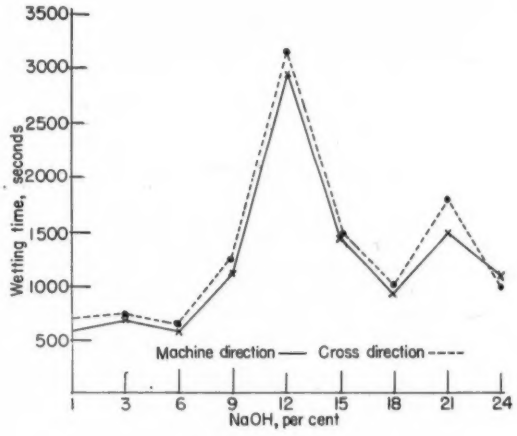


FIG. 3.
Purified Sulphite

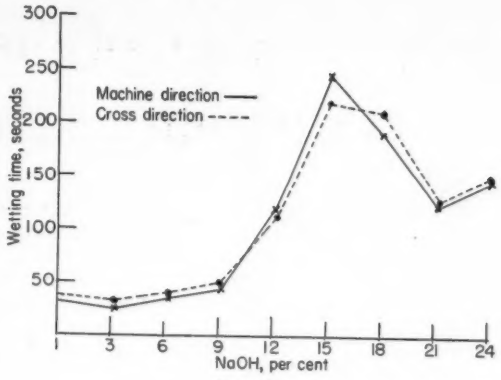


FIG. 4.
Alpha Pulp

These figures clearly show the difference in absorptivity of various kinds of pulp and also the differences between machine and cross direction, indicating a more or less irregular sheet formation. Alpha pulp generally possesses very high absorptivity and regular sheet formation. The alpha pulp manufacturing process produces in most cases a very soft cellulose fiber.

Further investigations were carried out, applying the same method, but using sodium hydroxide solutions of various concentrations instead of water. The figures obtained are shown in Table I. and Figs. 2, 3 and 4. The results indicate a maximum of swelling at about 12 per cent NaOH and a minimum of swelling at about 18 per cent NaOH.

Discussion of the Results

The wetting rate of pulp sheets depends first on the density of the sheet; the greater the density, the slower the rate. It often happens that the rate of wetting along the machine direction of the sheet differs greatly from that along the cross direction, showing the influence of mechanical operations during manufacture. In some cases, this difference may amount to as much as 50 per cent. Pulp sheets of homogeneous structure should show no difference in the wetting rate of strips cut in either direction. Indentations impressed too deeply on the sheet by the felt or the screen seem to be the cause of some variation.

The swelling property of the pulp sheets affects also the wetting rate. High concentrations of both strong alkalis and strong acids give rise to a great swelling effect on the cellulose fiber. In sodium hydroxide solutions, swelling increases with an increase of concentration until a maximum is reached at a point at which the sodium hydroxide concentration is about 9 per cent by weight. The strip often collapses at this concentration. Above this maximum point, the strip contracts in length and width but swells a little in thickness. Swelling of the fiber and the contraction of the sheet take place simultaneously

TABLE I

Pulp used		NaOH Concentration 1 per cent	3 per cent	6 per cent	9 per cent	12 per cent	15 per cent	18 per cent	21 per cent	25 per cent	Absorption time in
Normal sulphite pulp	Machine direction	1198	1015	1415	3600	3120	1007	875	1510	900	seconds
	Cross direction	1482	1475	1505	3600	3200	1017	1153	1537	1012	seconds
Purified sulphite pulp	Machine direction	544	600	536	1087	2940	1340	900	1500	1085	seconds
	Cross direction	607	608	561	1260	3002	1395	905	1795	915	seconds
Alpha pulp	Machine direction	30	25	32	45	120	240	184	120	145	seconds
	Cross direction	37	31	37	45	115	215	210	122	145	seconds

in concentrated solutions. Swelling also makes the cellulose fiber become sticky and reduces the capillaries of the sheet and thus decreases the wetting rate. The temperature and the moisture content of the sheet will no doubt affect the wetting rate. However, these factors were not taken into account at this time.

The width of the strip profoundly affects the wetting rate, the narrower the strip, the faster the rate. At the same time, observation during the wetting tests shows many facts concerning the sheet properties. For instance, some pulp sheets begin to split up into two separate layers soon after wetting with the caustic. Other pulp samples may show more or less non transparent spots caused by unequally dispersed fibers. The less transparent areas require a longer time for wetting than the sourrounding area. The color of the pulp sheet may change during the wetting test.

The Book of Progress, 1939

The D. M. Bare Paper Company of Roaring Spring, Pa., is announcing the publicaton of a new book entitled "The 'Book' of Progress 1939", which chronicles the reasons behind the outstanding success of the company since its founding in 1865.

The company, said to be first to introduce the word "stabilized" into paper terminology, explains in its new book that this word describes a new process of paper drying control developed and only recently perfected after years of experimentation and research. The advantages derived from this stabilizing process are said to include uniformity and constant moisture content.

The new book is dedicated to "publishers and printers who appreciate the finest in book papermaking craftsmanship", and was prepared for the company by its advertising agency, Albert Frank-Guenther Law, Inc.

"Forward . . . with greater actual speed than the mystical progress attributed to the 'seven-league boots' goes our modern civilization", writes the company. "In the development of the arts and sciences, of commerce, finance and industry, mankind's great accomplishments have materially enhanced our enjoyment, comfort and convenience."

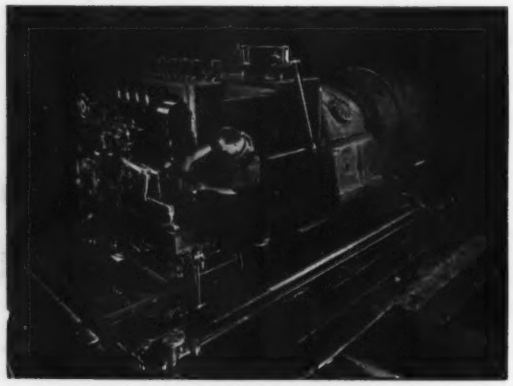
Now in its seventy-fifth year, the D. M. Bare Paper Company was founded in 1865 by Daniel M. Bare and John Eby, who built a paper mill in Spangs Springs, then a small Pennsylvania hamlet and now the town of Roaring Spring. Included in "The 'Book' of Progress 1939" are descriptions and samples of the company's book papers, which are among its principal products and are known as "Chaucer", "Ruskin", "Tennyson" and "Whittier". Several samples of special papers are also included and the various chapters of the book are set in different type styles.

Champagne Paper Corp. Moves

The Champagne Paper Corporation, formerly of 345 West 40th street, New York City, has moved its general offices and factory to Pisgah Forest, N. C. For the convenience of its customers, however, the company will maintain an office at 9 Rockefeller Plaza, New York City, telephone numbers, Circle 7-4864-4865-4866.

Turbine for Large Sulphite Plant

The illustration presented herewith represents a 2000 kw, 3600 rpm Allis-Chalmers condensing automatic extraction impulse reaction steam turbine shown during shop erection and under recent construction for use in a large plant. The unit was designed for steam conditions of 600 pounds gauge 750 deg., 28½ inches of vacuum. The design provides for extracting steam automatically for processing service at pressures from 5 pounds all the way to 50 pounds as may be required. Approximate shipping weight of complete turbo-generator unit is 75,000 pounds.



INSTALLATION IN LARGE SULPHITE PLANT

Production activities have again been put in full swing by Allis-Chalmers Manufacturing Company, Milwaukee, Wis., following a short work holiday and strike early in June at the Company's West Allis Works. Negotiations over a new labor agreement had been temporarily deadlocked until the union ratified the new contract which is essentially the same as the one of last year.

Price Bros. Reelect Officers

[FROM OUR REGULAR CORRESPONDENT]

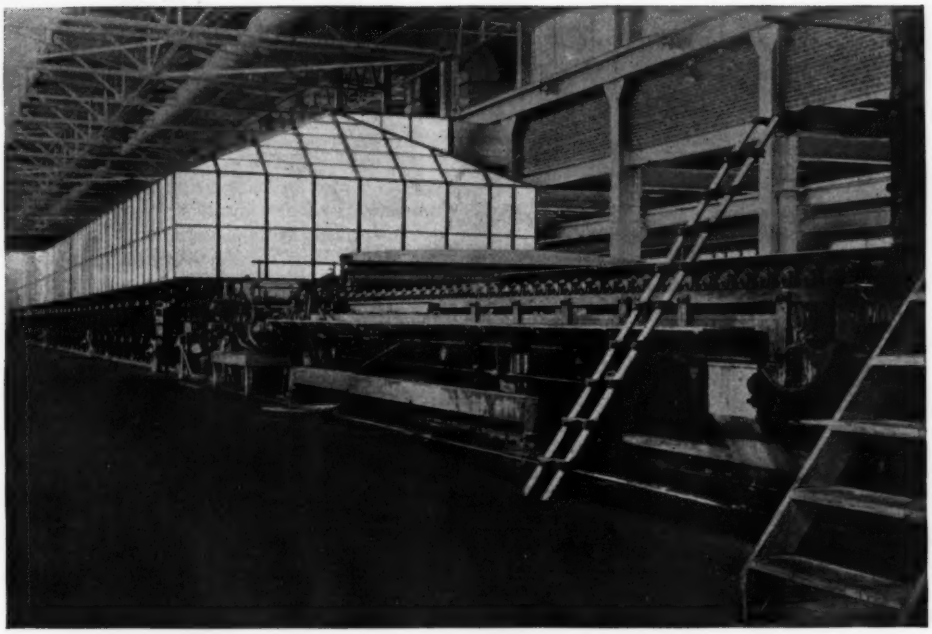
MONTREAL, Que., July 3, 1939—At the annual meeting of Price Brothers and Company, Limited, held in Quebec, H. J. Symington was re-elected chairman, and all other officers and directors were re-elected.

At a special meeting of the shareholders the membership of the board of directors was increased from 10 to 11, subject to approval of the Provincial Secretary. The new director will be W. A. Arbuckle, of Montreal. It was also decided to change the date of the end of the financial year from March 31 to December 31.

The general meeting approved the annual report of the directors, the financial report for the year ended last March and after election of directors took care of routine business.

Following are the officers and directors re-elected: H. J. Symington, chairman; C. H. L. Jones, president; A. A. Aitken, vice-president; J. H. Price, vice-president; P. W. Sims, treasurer; Hector Cimon, secretary; F. A. Bussieres, assistant secretary. Directors: A. A. Aitken, J. D. Johnson, C. H. L. Jones, Alfred Marois, J. C. Newman, A. C. Picard, Sir Keith Price, Paul F. Sise, H. J. Symington, A. C. M. Thomson.

ANOTHER BELOIT MACHINE



THIS FINE PAPER MACHINE IS THE PRODUCT OF THE MODERN ENGINEERING AND MANUFACTURING FACILITIES WHICH MAKE BELOIT THE LEADER IN MEETING THE EXACTING DEMANDS OF THE PAPER INDUSTRY

THE BELOIT WAY BELOIT IRON WORKS PAPER MACH'Y BELOIT, WIS. U.S.A. **IS THE MODERN WAY**

FALLS PULP AND PAPER CO. PROPERTIES SOLD

(Continued from page 15)

floods and the increased power made available for industry. Work is to be started as soon as the charter is granted.

Pulpwood Rafts To Start Soon

Towing of pulp wood rafts across Lake Superior to Ashland, Wis., by the Consolidated Water Power and Paper Company and other shippers is soon to start. Winter cuttings in Canada have been floated down the Pigeon River to Lake Superior, and lumberjacks are making up the huge rafts. The Newaygo Tug Line will bring most of the rafts to Ashland, where the logs will be reloaded for rail shipment to mills.

Kimberly-Clark Relations Program Discussed

Kimberly-Clark Corporation's industrial relations program was explained to the Rotary club of Neenah, Wis., at a meeting last week by Charles G. Eubank, director of industrial relations. He declared the public forms its opinions from the exciting and spectacular headlines in the newspapers about employers and employees who do not work together harmoniously and effectively. So little attention is devoted to cases where they do work together harmoniously and effectively.

"In Kimberly-Clark Corporation," said Mr. Eubank, "every supervisor from foreman to president is vitally concerned with securing and maintaining god industrial relations. However, management alone does not and cannot carry the whole responsibility. The non-supervisory employees share the responsibility with the management."

How this is accomplished through the industrial relations department was further explained. The Department has five divisions, with a head for each, and definite responsibilities. These are:

F. A. Robinson—Employment, health and safety, employe and community service and school contacts.

L. A. Eisenach—Mutual Benefit Association, workmen's accident compensation, pensions, unemployment compensation and group insurance.

M. H. Kettenhofen—Standard instruction coordination, collective bargaining agreements, hours, work schedules and overtime and model payrolls and individual hourly rate handling.

W. F. Cook—Wage administration, salary administration and employee merit rating.

J. C. Simonich—Employee training, transfer, promotion and turnover and crew organization.

Summer Recreation Plans of Paper Mills

Summer recreational activities are occupying the attention of numerous paper mills. The Lakeview Recreation Association of Kimberly-Clark Corporation, Neenah, Wis., will hold a picnic for employees and their families July 16. Gilbert Paper Company, Menasha, Wis., will hold its picnic at Menasha Park July 29. The Neenah Paper Company's annual outing has tentatively been set for July 15. Others making preliminary arrangements are Marathon Paper Mills Company's Menasha Products division and the George A. Whiting Paper Company, both of Menasha.

Preliminary plans also are being made for the annual golf tournament of Kimberly-Clark, under auspices of Lakeview Recreation Association. It will be held at Ridgeway Golf Club, Neenah. Herbert Jewell, James Grode and John Farmakes will be in charge.

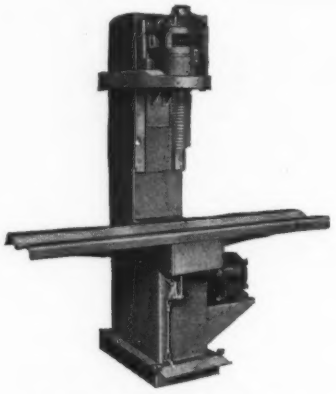
Robert Zwettler of the Kimberly-Clark Corporation, Neenah, Wis., and Miss Janet Bahr, Neenah, were married June 27 at St. Margaret Mary church at Neenah. Their wedding trip is taking them to northern Wisconsin and Michigan, and they will occupy a cottage for the remainder of the summer at Lake Winnebago.

Mother of E. A. Meyer Dead

Condolences have been expressed to E. A. Meyer, president of Badger Paper Mills, Inc., Peshtigo, Wis., because of the death last week of his mother, Mrs. Anna Meyer, 89 years old, at Stevens Point, Wis. Burial was made at Neenah, Wis.

A New Knot Drill

A new idea in knot drills that eliminates pipe line connections of any kind is announced by D. J. Murray Manufacturing Company, Wausau, Wis. This knot drill, illustrated here, combines all of the desirable features of a mechanical, water, air or steam driven drill, plus advantages not found heretofore in any machine of this type. The manufacturer points



A NEW MURRAY KNOT DRILL

out that this new knot drill is so flexible in operation and instantly adjusted to top working speed that wood cleaning costs are reduced, while efficiency and production are greatly increased. Some of the features pointed out are; it is faster because it is not dependent on outside connections; self-contained; operates on proven principles of oil drives found on modern precision machine tools; adjustable; positive; and it is rugged in design and built for service.

Rambicur Co. Starts

A. J. Rambicur announces that he has relinquished all interests in the Central States Paper Company and is now established as the Rambicur Paper Company, 809 Walnut Street, Room 4, second floor, Cincinnati, Ohio. Mr. Rambicur states that he intends to follow along the same lines as in the past handling towels, toilet tissue, kraft papers, bond papers, twines, etc.

Obituary

Alexander Thomson

Alexander Thomson, Chairman of the Board, The Champion Paper and Fibre Company, Hamilton, Ohio, died at Christ Hospital, Cincinnati, June 27th, following a short illness of pneumonia and heart complications.

Mr. Thomson had been associated with Champion for 42 years, starting as a mill hand at the age of 17, and successively acting as Assistant Sales Manager, Sales Manager, Vice President, President and Chairman of the Board.

He was active in many civic and business organizations. He recently completed a term as President of the Ohio Chamber of Commerce and was a member of the United States, Ohio, Cincinnati, and Hamilton Chambers. Mr. Thomson was a member of the board of both the National Association of Manufacturers and United States Chamber of Commerce and a director of Cincinnati Federal Reserve Bank. He had membership and a keen interest in many paper and board associations for years enjoyed a close contact with youth through his work with the Boy Scouts and Young Men's Christian Association.

Harvey E. Cory

Harvey E. Cory, treasurer of the Alling & Cory Company, at Rochester, N. Y., and son of a founder, died tonight of a stroke at the age of 72. Mr. Cory followed in the footsteps of his father, David Cory, and entered the 120-year-old paper supply business fifty-six years ago. The firm has branches in Pittsburgh and Buffalo. Surviving are two daughters, Mrs. Philip F. Chew of Syosset, L. I., and Mrs. Richard M. Harris of Rochester, wife of the president of the firm. In 1931 Mr. Cory presented a stained-glass window to the chapel of Princeton University in memory of his son, Harvey Lawrence Cory of the class of 1917, who was killed in action in France in 1918.

Edwards W. Church

Edwards W. Church, 45, secretary of the Cincinnati Cordage and Paper Company, Cincinnati, Ohio, died June 26 at Holmes Hospital of a heart ailment from which he had suffered for several years.

Mr. Church was a member of the Ohio River Yacht Club, a charter member of the Lions Club and a member of the Cincinnati Club.

Surviving are his mother, a brother and a sister. Funeral services were held at the St. Luke Episcopal Church and burial was in Spring Grove Cemetery.

Lloyd A. Johnson

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., July 3, 1939—Lloyd A. Johnson, 39 years old, widely known to the paper trade of the state and a salesman for local companies for ten years, died recently. He had been ill two months. The widow and three children survive.

Printing paper is the outstanding item in the paper and paper products export trade of Germany and accounted for 132,000 metric tons of the total trade in 1938 compared with 202,169 tons in the preceding year. Other principal items are paste-board, colored paper and writing paper, according to the report.

Indianapolis Trade Maintained

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., July 3, 1939—A well maintained volume in the wholesale paper market in this section was seen during the last week, but with the holiday coming as it does, volume this week likely will be cut down materially. Some of the wholesale houses plan to remain closed today and will not open until Wednesday and most of the mills shut down last Friday and will open Wednesday. One of the largest paper board mills here plans to open Wednesday after having been shut down for four months because of labor difficulties.

A slight decline was seen in demand for covers and ledgers, but this was expected by most of the jobbers at this time of the year. However, prices are well maintained and there have been no disorders to interrupt them for the past several weeks. Book paper, however, seems to continue in good demand, some jobbers giving as the reason the fact that advertising seems to be picking up and there are a lot of smaller "slick" papers published in this section.

Newsprint demand holds steady. Demand for summer specialties is very heavy, but a lull is expected during the coming week. Preparations by retailers for the extended holiday boosted the volume and if the weather continues warm and clear these same retailers will be back in the market shortly.

A slight lull was seen last week in building paper and roofing demand. This was to be expected, since July, even in the best of building years, generally shows a decline in building volume. Jobbers say retailers likely will spend this month getting their stocks balanced and in some instances built up for the fall trade, which promises to be heavy.

Container executives say demand is good, particularly those making supplies for the dairy and ice cream trade. Waxed paper demand also is reported steady with no price change.

A slow demand was seen this week in rag and paper stock demand.

Salaries and Wages Paid by U. S. Wood Using Industries in 1937

Industries in the United States using wood as their basic material paid more than a billion dollars in wages and salaries in 1937, according to a study compiled by the Forest Products Division, Department of Commerce.

The salaries and wages were approximately a quarter of the total value of the products of the lumber and allied products industries. Of the 14 major industries in the United States in 1937, as classified by the Bureau of Census, the lumber and allied industries had the highest ratio of wages paid out to value of products.

A total of 1,051,478 employes in the lumber and allied industries, wood pulp and paper industry in 1937 shared $1,154,629,263 in wages and salaries during 1937. Wood pulp and paper industries gave employment to 297,258 persons with salaries and wages amounting to $391,016,099.

The combined value of lumber and allied industries and wood pulp and paper products is placed fifth in national importance, exceeded only by food and kindred products; iron and steel and their products not including machinery; textiles and their products, and transportation equipment.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry announces, through Secretary Macdonald, the election to membership in the association the following:

Francis P. Ford, Chemist, National Blank Book Company, Holyoke, Mass. received his formal education at Dartmouth College and the Massachusetts Institute of Technology.

Richard H. Dempsey, Vice-President, Rising Paper Company, Housatonic, Mass., was assistant superintendent of the Strathmore Paper Company, West Springfield until 1930 and has been at Housatonic since that time.

C. Herbert Lindsly, chief chemist, Latex Fiber Industries, Inc., Beaver Falls, N. Y., graduated from the Missouri School of Mines. He was formerly with the U. S. Rubber Company, White Eagle Refining Company and Phelps-Dodge Corporation.

Carroll A. Homan, Chemist, Bird & Son, Inc., East Walpole, Mass. graduated from the University of Maine with a B. S. degree in Pulp and Paper Technology.

K. Wilhelm Rosen, Research Engineer, Korsnas Sagverks A/B, Gefle 3, Sweden, graduated from the Royal Technical College and is a member of the Svenska Pappersoch Cellulosa-Ingeniorsforeningen. He was formerly with the Svelvik Papirfabrik, Kopparfors, Stora Kopparbergs and was a Fellow at the U. S. Forest Products Laboratory in 1926-27.

John Buss, Engineer, Provincial Paper Ltd., Toronto, Ont., received his M.S. degree from the Massachusetts Institute of Technology. He was formerly with the Nashua Gummed and Coated Paper Company, Arhtur D. Little, Inc. and Bogalusa Paper Company.

Henry A. Samton, 35-40 82nd Street, Jackson Heights, Long Island, N. Y. received his Doctor of Laws degree from the University of Berlin. He was formerly mill manager of Adolph Fiegel, Berlin and Copitz-Saxony.

J. Stanley Babbitt, manager, Gair Company Canada Limited, Montreal, Inc. received his technical education at Cornell University. He was formerly vice-president of the Minton Vacuum Dryer Company.

Harold C. Parish, Chemist, Skinner & Sherman, Inc., Boston, Mass. received his Ph. C. degree from the Philadelphia College of Pharmacy and Science. He was with Arthur D. Little, Inc. formerly as assistant director of tests.

Thomas B. L. Young, Laboratory Assistant, Canadian International Paper Company, Three Rivers, Que. is a graduate of the University of Toronto. He was formerly with the Canadian General Electric Co. and is a member of the Canadian Pulp and Paper Association.

Walter B. Roberson, assistant chief chemist, Southern Kraft Corporation, Camden, Ark. attended Arkansas State College.

Fred B. Stieg, technical sales, Rayonier Incorporated, New York, N. Y. is a graduate of Penn. State College. He was formerly with E. I. du Pont de Nemours, Bethlehem Chemical Company, a captain in U. S. Army, and McAbee Powder Company.

Richard J. Auchter, Chemical Engineer, 2645 N. 37th street, Milwaukee, Wis. is a graduate of Marquette University. He was formerly with the Nekoosa-Edwards Paper Company.

Geo. H. Kauffeld, Jr. Special Representative, De Laval Separator Company, Pittsburgh, is a graduate of the Stevens Institute of Technology.

Charles T. Faas, President, Oil States Petroleum Co. Inc., New York, has been president of this company since 1919.

Frederic A. Olmsted, Technical Supervisor, Crown Williamette Paper Company Division of the Crown Zellerbach Corporation, Camas, Wash., graduated from the Massachusetts Institute of Technology. He was formerly with the Hood River Spray Company, Williamette Pulp and Paper Company and Arthur D. Little, Inc.

Albert S. Quinn, Vice-President, Stebbins Engineering Corporation, Seattle, Wash. has been transferred to Active Member.

Theodore E. Carron, paper technician, technical development laboratory, Thames Board Mills, Ltd., Purfleet, Essex, England, has been with this company for 5 years. He is a member of the Technical Section of the Paper Makers Association of Great Britain and Ireland.

Charles M. Barr, Partner, Cavin, Marshall & Barr, Seattle, Wash. is a graduate of Penn. State College.

Frank P. Silver, mill manager, Bowaters Newfoundland Pulp and Paper Mills Limited, Corner Brook, Newfoundland, was formerly with the International Power and Paper Company of Newfoundland Ltd., Maine Seaboard Paper Company, Bucksport, Me., Cushnoc Paper Company, Augusta, Me. and Price Brothers & Co., Ltd., Riverbend, Que.

Albert V. Slater, chemist in charge of stencil production, Messrs. D. Gestetner Ltd., Tottenham, London, England, attended Sheffield University and was formerly with Reckitt & Sons, British Celanese, and Northern Rubber Company.

H. M. Spencer Lewin, general manager and director, Bowaters Newfoundland Pulp and Paper Mills Limited, Corner Brook, Newfoundland, and managing director, Bowater-Lloyd Limited, attended the Royal Naval College. He was formerly with McDonald, Currie & Co.

George P. Graham, technical representative, Montreal, was educated at McGill University. He was formerly with the Howard Smith Paper Mills Ltd. and the Forest Products Laboratories.

Frank J. Lovegren, chemist, Inland Empire Paper Company, Millwood, Wash. was educated at the University of Washington.

Walter L. Perro, pulp mill superintendent, Advance Bag and Paper Company Inc., Howland, Me. was educated at the University of Maine. He has been with this company for 12 years.

John C. Kreamer II, plant chemist, Container Corporation of America, Chicago, Ill., was educated at North Central College.

Herbert A. Kaufmann, technical advisor, American Maize Products Company, Roby, Ind. was educated at the Massachusetts Institute of Technology. He was formerly with Stein, Hall & Co.

John J. Thompson, mechanical engineer, Worthington Pump and Machinery Corporation, Harrison, N. J. was educated at Purdue University.

Robert M. Gavin, Chemist, Beach and Arthur Paper Company, Paperville, Pa. was educated at Boston College.

Clyde R. Faulkender, Junior Scientific Aid, U. S. Department of Agriculture By-Products Laboratory, Ames, Iowa, is attending the Iowa State College.

New Literature

Leaflet E-1173, issued by DeLaval Steam Turbine Company, Trenton, N. J., describes the De Leval equipment used in the Colonel Francis G. Ward pumping station at Buffalo, N. Y. It is stated that with power at $0.00482 per kw. hr. the cost of pumping is $3.80 per million gallons.

A new folder issued by the Asten-Hill Manufacturing Company, Philadelphia, Pa., describes Asten's patented asbestos drying felts, which the company states are used in 5½ per cent of the paper mills in this country.

Belting Biographies, in a 36-page booklet issued by the Mechanical Goods Division of the United States Rubber Company, 1790 Broadway, New York. The publication shows case histories of the company's belting products, and contains much technical information on the selection and installation of drives and conveyor layouts, with suggestions for improving belting methods.

A booklet on stopping profit leaks beyond the production line, has just been issued by the Acme Steel Company, 2840 Archer avenue, Chicago, Ill. It describes the causes of excessive packing and shipping costs and illustrates the manner in which the Acme Steelstrap and Unit-Load process may be used to eliminate unnecessary shipping expense.

In a new bulletin issued by The International Nickel Company, 67 Wall street, New York, the service record of Monel wire cloth and winding wire in filters, washers, wet machines, deckers and savealls, in pulp and paper mills is described.

Modern Oakite cleaning methods for paper mills are described in a new booklet issued by Oakite Products, Inc., 22 Thames street, New York. It discusses the removal of slime from pipe lines, screen plates, washing felts, cleaning Fourdrinier and cylinder wires and other mill equipment.

Five new bulletins issued by The Bristol Company, Waterbury, Conn., describes the company's products. Bulletin No. 512, covers Bristol's system of Coordinated Process-Control technique. No. 525, treats on Humidity Recorders and controllers for air conditioning, heating and drying processes. No. 528, shows a section from a typical chart record on a Bristol Multiple Record Pyrometer, upon which instruments may be obtained as many as eight temperature records, with identifying numerals and colors. Bulletin No. 529, describes Bristol's Strip Chart Resistance Thermometers, No. 538, describes Bristol's new Portable Voltmeter, designed and constructed to withstand rough handling.

New sample books issued by the Rising Paper Company, Housatonic, Mass., show the new Finance bond and ledger papers, of 50 per cent rag content. The bond paper has a smooth surface with sufficient cockle to give it style and an attractive appearance, and is available in four weights and in seven colors. The ledger paper is designed for records subject to much handling and is supplied in white and buff. Copies of these sample books may be obtained from the company.

New Paper Plant at Segezha

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 27, 1939—An article in the Moscow, Russia, "Pravada" describes the new paper and pulp combine recently completed at Segezha, in the Karelian republic. This article is abstracted below.

Segezha was formerly known for a small sawmill, surrounded by old huts. But now it is the site of a new giant paper and pulp combine, which has been completed at the cost of 218,000,000 paper rubles, and has begun production. The combine consists of a pulp mill, a paper mill, an electric-waste heat station, and subsidiary buildings for treating factory wastes. The electric station, of 12,000 kilowatts, provides power and heat for the plant and the workers' dwellings. The pulp mill will handle annually 1,500,000 cubic meters of wood, taking all kinds without selection. Logs are loaded by 4 American machines, and go direct to the digester, where they are converted into craft pulp. This in turn is made into paper, on the one machine so far installed, which turns out 30 tons a day. Another machine will soon start operations. The annual production of the whole combine is estimated at 70,000 tons of pulp and 40,000 tons of paper. There is a bag factory, which will turn out about 100,000,000 bags a year for cement, fertilizers and other products. So far as possible, all factory wastes will be treated and converted into calcium acetate, 1,000 tons a year; wood tar, 3,000 tons; rosin soap, 3,000 tons; and ground lime for fertilizer, 6,000 tons. A gas-generator station, using wood waste, will produce 54,000,000 cubic meters of gas a year for the furnaces burning lime. A modern four-frame lumber mill is being built.

The pulp and paper mills represent the last word in modern foreign technique. From the builders of the mills have been selected a number of engineers and technicians fully capable of running the plant and the complicated machines. It is expected that in this mill, built in the center of forests and swamps, high quality pulp and paper, as well as other products, will soon be produced in quantity.

Paper Men File Wage Objections

WASHINGTON, D. C., July 3, 1939—The American Paper and Pulp Association, the Inland Empire Paper Company, Millwood, Washington, and the Hudson Pulp and Paper Corporation of New York all filed briefs here last week with the Public Contracts Board objecting to the suggested minimum wages in the paper and pulp industry.

The Association urged that the Pacific Coast's states designation as a separate wage zone be eliminated on the ground that it serves no purpose. The Association also objected to the definition of the industry as set forth by the Board. It further objected to the provision for apprentices, learners and handicapped workers. Further, the Association protested the minimum wage determinations.

The Hudson Company stated that the 40-cent rate is discriminatory to male workers and that company recommended to the Board that "if any setup is established it be based on a recognized differential between female and male labor and the female be set at 30 cents an hour and the male at 40 or 45 cents an hour."

The Inland Company objected to the minimum wage of 50 cents an hour applying to that company in the suggested new wages. It was pointed out that its mill is 350 to 400 miles from the Pacific Coast and that the company, because of its situation, cannot compete with Pacific Coast manufacturers. The 50 cents, it stated, is higher than the midwestern mills and it places the Inland Company at a disadvantage. The Board has taken the matter under advisement.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Rhinelander, Wis. — The Rhinelander Paper Company, manufacturer of glassine, greasproof and other paper stocks, has approved plans for addition to mill, to be two-story, about 50 x 94 feet. A portion of structure will be used for laboratory service and remainder for general operations. Cost reported close to $40,000, with equipment. General erection contract has been let to C. R. Meyer & Sons Company, 50 State street, Oshkosh, Wis., and work will be placed under way at once.

Camas, Wash.—The Crown Willamette Paper Company, manufacturer of kraft, manila and other paper stocks, has awarded general erection contract to Drake, Wyman & Voss, Fenton Building, Portland, Ore., for new addition to mill, recently referred to in these columns, and for which work will proceed at once. It will be four-story, 42 x 225 feet, equipped for expansion in bag-making division and in bag roll storage department. Work also includes a one-story laboratory, 44 x 120 ft., on which erection will be carried out at same time. Cost estimated over $100,000, including equipment. Company is a division of the Crown Zellerbach Corporation, 343 Sansome Street, San Francisco, Calif.

Fredericksburg, Va.—The Sylvania Industrial Corporation, manufacturer of cellulose transparent paper materials, has approved plans for new addition to mill at Fredericksburg, consisting of a one-story structure, to be used primarily for expansion in storage and distributing division. Cost reported over $45,000, with equipment. General erection contract has been awarded to Hughes-Foulkrod Company, Schaff Building, Philadelphia, Pa., and work will begin soon. Executive offices of company are at 122 East Forty-second street, New York, N. Y.

Brooklyn, N. Y.—The Federal Paper Company, 520 Park avenue, Brooklyn, commercial paper products, has arranged for lease of three large industrial buildings on local site at Morgan avenue and Maujer street, Greenpoint district, totaling about 25,000 square feet of floor space, formerly used by the Rubel Ice Manufacturing Company. New owner will improve and occupy at early date for storage and distribution, and other departments of operation. Present plant will be removed to new location and large increased capacity carried out. The lease is for a term of 10 years.

New York, N. Y.—The National Gypsum Company, 190 Delaware avenue, Buffalo, N. Y., manufacturer of wallboard and allied products, has preliminary plans under way for expansion in branch plant at East 148th to 150th street and East River, New York, consisting of several one-story units for large increased capacity. Proposed to begin work in near future. Cost reported over $600,000, including equipment. D. F. Hunt, first noted address, is chief engineer for company.

Lufkin, Tex.—The Southland Paper Mills, Inc., Lufkin, now constructing a new mill for production of newsprint, located at Herty, near Lufkin, is beginning to secure shipments of equipment for plant, including part of the paper-making machine in course of building at plant of Pusey & Jones Corporation, Wilmington, Del. This machine will have a number of innovations, including a new type Fourdrinier frame. It will have a capacity of making a sheet 14-foot wide at rate of close to 1350 per minute, comprising one of the fastest machines ever built for newsprint production. It will be operated in conjunction with other equipment at the mill on the basis of about 50,000 tons per annum. The Pusey & Jones Company expects to complete shipments of the machine by the close of summer, and it will be set up in the fall at the plant, which is scheduled to be ready for regular production next February. The mill will cost approximately $5,000,000, with equipment. Ernest L. Kurth is president. George F. Hardy, 305 Broadway, New York, is consulting engineer.

Buffalo, N. Y.—The Buffalo Waste Paper Company, 98 Terrace street, has concluded arrangements for the purchase of former multi-story building of the Larkin Company on Harwood place, near Seneca street, totaling about 100,000 square feet of floor space, and will improve and equip for new storage and distributing plant, using entire floor area. Company is discontinuing its former storage building at 345 Babcock street, recently sold to the Verity Mills, Inc., and will transfer operations to the new structure, where considerable increase in facilities will be available.

Cleveland, Ohio—The William A. Howe Company, 1625 East Thirty-first street, operating a plant for general finishing of paper products for the lithographing and printing trades, including gumming, varnishing, lacquering and allied finishing work, has awarded general contract to the H. G. Slatmeyer & Son Construction Company, 203 Lakeside street, for new one-story addition, comprising a third floor on present two-story structure, 60 x 100 feet. It is estimated to cost close to $40,000, with equipment. Work will be placed under way at once. Julius Boenisch, Finance Building, Cleveland, is architect. Edgar W. Renterer is president.

Greenville, S. C.—The Palmetto Box Company, Greenville, organized recently with capital of $50,000, has awarded general contract to Potter & Shackleford, Inc., Greenville, for proposed new plant at 400 Birnie street, where property has been acquired, as previously noted in these columns. New plant will be one-story, about 80 x 150 feet, and will be equipped for the production of a line of paper boxes and containers, including different types of set-up cardboard boxes. It is reported to cost approximately $50,000, with equipment. Erection is scheduled to be placed in progress at once. New company is headed by Carl E. Morgan, Masonic Temple Building, Greenville; and Edwin S. Dillard, 512 State street, Charlotte, N. C.

Wabash, Ind.—The American Rock Wool Company, manufacturer of insulation board products, etc., has completed plans for three new one-story additions to plant, 42 x 160 feet, 60 x 60 feet, and 30 x 30 feet, respectively. The first noted structure will be used for storage and distributing department, and last mentioned building will be equipped for laboratory service. Erection will be carried out by day labor. An award for structural steel framing has been let to Hetherington & Berner, 701 Kentucky avenue, Indianapolis, Ind. Cost estimated over $60,000, with equipment.

Pearisburg, Va.—The Celanese Corporation of America, Inc., 180 Madison avenue, New York, N. Y., manufacturer of cellulose rayon products, has begun erection of new mill on large tract of land between Pearisburg and Narrows, Va., previously referred to in these columns, and will have superstructure under way on six main buildings at early date, of which two large units, each three-story, will be used for production service, approximating 270 x 452 feet in size. A power house and pumping plant will be built, as well as storage and distributing buildings, laboratory and office structure. Company is awarding a contract for the construction of a concrete road to the mill site, extending from an intersection with Route No. 8, to be about 3 miles long. This will be used for machinery and equipment transportation as soon as completed. New mill will represent an initial investment of about $5,000,000, with machinery. The Hughes-Foulkrod Company, Schaff Building, Philadelphia, Pa., has the general erection contract. Peter D. Cooper is general manager of company.

New Companies

Rochester, N. Y.—The Genesee Valley Paper Company, Inc., has been incorporated with capital of $25,000, to deal in paper products of various kinds. New company is represented by Moore & Norton, 2831 Delaware avenue, Kenmore, N. Y., attorneys.

New York, N. Y.—The Albright Paper Bag Corporation, New York, has been organized with capital of $75,000, to manufacture and deal in paper bags and containers. It is understood that company will take over and succeed to the Albright Bag & Paper Corporation, 474 West Broadway, New York. New company is represented by Herwood, Paris & Herwood, 521 Fifth avenue, New York, attorneys.

New York, N. Y.—The Envelope Machine Corporation, New York, has been organized to deal in machinery and equipment for envelope and other paper goods manufacture. New company is represented by Charles Segal, 21 East Fortieth street, New York, attorney.

New York, N. Y.—George W. Stretton's Sons, Inc., New York, has been chartered with capital of 100 shares of stock, no par value, to deal in paper products of various kinds. It is understood that new company will take over and succeed to business heretofore conducted under name of George W. Stretton, 202 East Seventy-seventh street, New York. Thomas F. Franklin, 70 Pine street, New York, is attorney and representative.

Malone Mill Sold for $32,500

The mill and property of the Malone Special Papers, Inc., Malone, N. Y., was sold June 24 for $32,500 to Bagley & Sewell Company, Inc., of Watertown, manufacturers of paper making machinery, at a foreclosure sale at the court house. The price was the upset or minimum price allowed under a Supreme Court order.

Abe Cooper, of Syracuse and Watertown, who made the successful bid for the Watertown firm, said the new owners hoped to lease or re-sell the property for operating purposes. The Cooper bid was the only one made for the entire property. Mr. Cooper said the firm he represented desired to lease the property because of the machinery repairing and rebuilding business which would result.

The sale, originally scheduled for last Saturday, was postponed a week when the single bid of $25,000 by Mr. Cooper was under the original upset price of $40,000 fixed by Supreme Court Justice O. Byron Brewster.

During the past week, Justice Brewster allowed the minimum price to be lowered to $32,500.

George J. Moore, as referee, conducted the sale and the action for foreclosure and sale was brought by the Peoples Trust Company of Malone as trustee for the benefit of the bondholders secured by mortgage or deed of trust by Malone Special Papers, Inc., against Malone Special Papers, Inc., and other defendants.

The property includes, besides the mill, erected in 1903 and improved from time to time since that date, 500 cords of pulp wood, two houses and several hundred acres of wild lands.

Proposes Wood Pulp Tax

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 3, 1939—Representative Smith of Washington has introduced a bill in the House (H. R. 7034) to raise revenue by taxing imported chemical wood pulp.

The bill which has been referred to the House Committee on Ways and Means is as follows:

That section 601 (c) (4) of the Revenue Act of 1932 is amended by inserting before the period at the end of the first sentence thereof the following: "Chemical wood pulp, bleached or unbleached, one-half of 1 cent per pound gross weight.

To Handle Brown's Permanent Record

The Alling & Cory Company, has been appointed distributor in the Rochester—Buffalo, New York territory for L. L. Brown's Linen Ledger, the pioneer, 100 per cent new white rag permanent record paper made by the L. L. Brown Paper Company, Adams, Mass.

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EDITOR

Ronald G. Macdonald
Editor Technical Section

Lynne M. Lamm
Washington Correspondent

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COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Syracuse Hotel, Syracuse, N. Y., September 12-14.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park American Hotel, Kalamazoo, Mich.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Atlantic City, N. J. October 16-20.

WAGNER ACT AMENDMENTS

Inequalities in the National Labor Relations Act have been often cited and the National Labor Relations Board has been frequently charged with rendering arbitrary and unfair decisions in its administration of the Act. The fact that employers have been denied the privilege granted employees in determining which of two or more labor organizations should be selected as representing a majority of employees for collective bargaining purposes, where no labor union had petitioned the board for such representation, has been the cause of great and increasing dissatisfaction. As a result of this criticism the Labor Relations Board announced on June 21 an amendment to its rule to permit employers to petition the Board, and stated that it had amended its rules so that the period of notice of hearing in unfair labor practices should be not less than ten days instead of five. In commenting on the above decision of the Labor Board, Representative Cox of Georgia asserted the decision would not affect the decision of a House group to move for an investigation of the Labor Board.

Inequalities of the National Labor Relations Board "contributing to industrial discord" were put on the record of Congress on June 19 by the National Association of Manufacturers. In presenting the views of the Association which represents 7,500 large and small manufacturers, the Association's counsel, John G. Gall, before the Senate Committee on Education and Labor, said in part: "The Association is firmly convinced that the Act and its Administration leave much to be desired.

"There is throughout the business world a conviction that the National Labor Relations Board and its agents have been intensively pro CIO, that they have been hostile to employers, to independent unions and to employees not affiliated with national unions, that they have violated many elementary principles of fair play, and that they have not only not contributed to a reduction of the volume of labor disputes, but have in fact sown the seeds of future discord. If this state of mind is justified, as we believe it to be, the situation seems to call for such revision of the Act and such safeguards in administration as will win for the Act and whatever Board administers it, the public respect which is now lacking. Without the confidence of all affected groups, it is unlikely that any agency of government can function successfully."

In asserting that the Association wished to make it clear that it did not advocate repeal of the Act, nor sought amendments which will deprive employees of any rights which Congress intended them to have, Mr. Gall, said in part: "The suggestion has been made from time to time during these hearings that the chief fault at present lies in the administration of the Act and not in the Act itself. There is no question but that wise and just administration could have produced a different result, both as a matter of law and as a matter of meriting public approval. We are firmly convinced, however, that the Act itself, in its present form, is defective in several important particulars, that it creates inequalities contributing directly to industrial discord, and that its silence on matters of great public importance is a serious omission which provides a ready excuse for unfair administration."

In discussing the question whether the Act has established equality or has established a new inequality, Mr. Gall outlined the points to support the charge of inequity and cited Board decisions on each of these points. The amendments particularly emphasized by Mr. Gall were as follows: "(1) The preamble of the Act should be rewritten. (2) Revised definitions of 'employees' and 'current labor dispute' should be incorporated in the Act. (3) Employees should be protected against unfair labor practices, whether practiced by employers, labor organizations or fellow employees. Reasonable limitations upon the right to strike should be recognized, and the benefits of the Act should be withheld from those engaging in certain types of strikes, already enumerated in our statement. (4) The closed shop and the check-off should be definitely prohibited, as they are under the Railway Labor Act. (5) Freedom of speech should be safeguarded by clear and appropriate language. (6) Employer petitions for elections should be acted on by the Board, and such action should be mandatory where the employer is confronted by two or more groups, each claiming to represent a majority of the employees.

(7) Consideration should be given to elimination of the so-called majority rule provision, but if the rule is retained experience shows that other amendments must be made to make it effective and at the same time to protect those who do not wish to affiliate with the majority group. (8) The Board should not be permitted to make compulsory multiple-unit certifications, combining in one unit the employees of a number of employers. (9) A definite statute of limitations should be provided, so that employers may not be proceeded against long after the occurences to which the complaint relates.

(10) The complaining party in any proceeding before the Board should have the burden of substantiating its charges, the Board's function being merely that of determining the issues presented by the parties. (11) Labor organizations desiring to exercise the privilege of acting as collective bargaining agents should be required to place and keep on file with the Board, subject to inspection, reasonable information with respect to themselves and their responsibility."

In concluding, Mr. Gall said in part: "The present Act gives the Board a discretion so great as to recognize few limitations. There is discretion in applying the Act, in interpreting it, in determining the appropriate unit, in holding or denying elections, in timing elections, in applying the rules of evidence, in granting or denying subpoenas, and discretion as to the remedy which will 'effecutate the policies of the Act' ".

Japanese Paper Exports Increase

The United States was the only country outside of the yen-bloc area which increased its purchases of Japanese paper in the first quarter of this year as compared with the corresponding 1938 period, a report to the Department of Commerce from its Tokyo office shows.

Shipments to the American market increased from 266,904 pounds valued at 420,216 yen ($121,900) during the first three months of 1938 to 290,004 pounds valued at 488,306 yen ($132,900) in the January-March period of this year.

Aggregate exports of paper from Japan in the first quarter of 1939 totaled 78,383,316 pounds valued at 12,974,000 yen ($3,530,000) compared with 54,207,146 pounds valued at 9,075,000 yen ($2,632,000) in the corresponding period of last year.

The sharp advance in Japan's paper export trade during the first quarter of the current year compared with the correspondng 1938 period was entirely the result of heavier shipments to the yen-bloc countries whose share of the trade advanced from 79 per cent in the first quarter of 1938 to 90 per cent in 1939.

A comparison of Japanese exports of paper, by kinds, during the first quarters of 1938 and 1939 shows substantial volume increases during the latter period in exports of printing papers, writing paper, pasteboard, packing paper, and several types of Japanese-style paper, but volume decreases in shipments of drawing paper, cigarette paper, and tissue paper.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1939	1938	1937	1936	1935	1934
January	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	84.0%	69.6%	90.3%	76.0%	70.5%	.....
April	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	80.3%	69.0%	90.6%	81.6%	69.4%	.....
June	.....	66.0%	87.3%	80.7%	72.3%	.....
July	.....	72.0%	81.8%	77.3%	64.9%	.....
August	.....	77.2%	82.9%	81.5%	70.9%	.....
September	.....	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average..	.....	72.3%	80.6%	81.3%	70.5%	.....
First 25 weeks..	81.0%	67.5%	90.2%	79.1%	69.3%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1939		CORRESPONDING WEEKS, 1938	
May 20	81.5%	May 21	69.7%
May 27	80.1%	May 28	71.4%
June 3	74.4%	June 4	62.5%
June 10	79.3%	June 11	64.9%
June 17	78.8%	June 18	66.1%
June 24	75.2%	June 25	67.7%

The following statistics show the number of mills reporting by ratio groups:

NUMBER OF MILLS REPORTING—CURRENT WEEKS

Ratio Limits	May 20 1939	May 27 1939	June 3 1939	June 10 1939	June 17 1939	June 24 1939
0% to 50%	62	54	91	65	64	53
51% to 100%	241	250	207	228	212	148
Total Mills Reporting..	303	304	298	293	276	201

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	% Jan.,	% Feb.,	% Mar.,	% April,	% May,	% June,	% July,	% Aug.,	% Sept.,	% Oct.,	% Nov.,	% Dec.,	% Year Avg.,
1935	62	68	68	63	61	66	62	67	71	77	71	61	66
1936	**62**	**67**	**67**	**70**	**69**	**70**	**69**	**75**	**78**	**82**	**80**	**74**	**72**
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	..	..	..	..	..	..	..	..

Week end. May 20, 1939—65%
Week end. May 27, 1939—66%
Week end. June 3, 1939—57%
Week end. June 10, 1939—66%
Week end. June 17, 1939—67%
Week end. June 24, 1939—66%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

Retains Packaging Consultants

The Racquette River Paper Company, Potsdam, N. Y., manufacturers of retail wrapping and box cover papers, has retained Harold Van Doren & Associates, Toledo, Ohio industrial designers, as consultants on department store packaging methods and operations. This marks the first time any paper manufacturer has engaged design and engineering service to meet a particular market, it is said. The industrial design firm is to assist the manufacturers, and upon request, their customers, in getting the ultimate performance from the papers used. This involves the choice of materials and the forms in which they are to be fabricated for the best engineering results.

Emphasis is to be placed on what papers are to be used for—their ultimate function—with actual operating performance as the field for research. The design firm, through Charles Ellsworth, recently introduced to department store merchandising a coordinated packaging program on a store-wide basis.

FOR THE MANY CHEMICAL STEPS IN PAPER PRODUCTION

One of the bays in the Pure Research Division at the Stamford Research Laboratories of American Cyanamid Company, where experimental activity is constantly endeavoring to broaden the usefullness of chemicals.

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Section of the
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Edited by Ronald G. Macdonald, Secretary

Review Of Paper Industry Literature

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Machinery

The Dual Press. Wochbl. Papierfabr. 69, no. 12:262; no. 17:369 (March 19, April 23, 1938); B. I. P. C. 8:429.—The inquirer seeks information with regard to the new dual press, its advantages, suitability for different grades, felt consumption, and whether it can replace the two ordinary and the one reversing press. The dual press is a contraction of the first two presses into three rolls (rubber suction roll, stonite roll, ordinary rubber rolls) placed horizontally the one to the other. Its great advantage is saving in space; felt consumption decreases because only two short felts are employed. No system of this kind has as yet been installed in Germany, although a similar arrangement with the suction roll in the center is being constructed by a German manufacturer. Referring to the first system, the drawback of the construction seems to be that when the web travels from the second to the third press under a very steep angle from below, part of the water squeezed out from the top part will be returned to the following sections of the sheet and felt. This defect will be the more pronounced, the heavier the grade of paper. It would be desirable to build the last roll also as a suction press; this, however, would emphasize two-sidedness.—C.J.W.

Roller Cleaning Devices for Paper Machines. Rohrbacher Lederfabrik Jos. Poeschl's Söhne A.-G. Brit. pat. 478,020 (Jan. 11, 1938).—Scraping means for use in connection with paper machine rolls consist, at least as to the parts coming in contact with the surfaces to be cleaned, of leather.—A.P.-C.

Method for Cleaning Suction Rolls on Paper Machines and Similar Machinery. A. Runeberg & Co., Helsingfors. Finn. pat. 17,576 (Aug. 31, 1935).—Within or without the suction roll are one or several sprays either fastened or movable, through which a washing medium passes.—J.F.O.

Flint Stones (agates). Wochbl. Papierfabr. 69, no. 11:241; no. 16:349 (March 12, April 16, 1938); B. I. P. C. 8:426.—The inquirer has an exceedingly high wear of flint stones and asks for remedies, as well as for the average period of run between grindings to be expected from agate stones used for calendering preespahn to a high gloss. All four sides of the stone are used in turn. It is not a good practice to use all four sides of the stone; only two opposite sides, and always the identical ones, should be employed. The stone should be as free from veins as possible, carefully installed under correct tension, and not be subjected to an excessive pressure. All working parts must be in perfect order. The average life of one stone for flint-glazing is about 210,000 sq. m. of product; regrinding became necessary after 1300-1600 sq. m. were thus treated.—C.J.W.

Accurate Cutting is Important Operation; Here are Practical Helps. Converter 12, no. 6:2-3 (June 1938); B. I. P. C. 8:427.—Attention is drawn to the importance of accurate cutting in order to prevent waste through spoilage. Modern automatic clamp paper cutters promote accuracy under cutting requirements which vary according to the nature of the material to be cut. Proper distribution of clamp pressure and correct regulation of clamping tension are essential; the method of actuating the knife bar and the effectiveness of the cutting knife play an equally important part.—C.J.W.

Shower Pipe for Paper, Carton or Board Machines, Which Uses White Water. Reiss Engineering Co. Ltd., London. Ger. pat. 651,702 (July 31, 1935).—The shower pipe is provided with a cleaning shaft within.—J.F.O.

Circulation Pump for Pulp Digestors. E. Morterud, Oslo. Finn. pat. 17,751 (March 9, 1935).—J.F.O.

Screen for a Cellulose Digestor. AB. Nordiska Armaturfabrikerna, Stockholm. Aust. pat. 149,987 (Feb. 15, 1937).—The invention concerns a screen for the bottom of the digestor which is so shaped that the pulp does not gather on it and thus plug the screen.—J.F.O.

Knotter for Paper Stock. Etablissements E. & M. Lamort Fils, Vitry-le-Francois. Aust. pat. 150,844 (May 15, 1937).—The covering of the rotating drum is formed of a number of screen plates.—J.F.O.

Process for the Emptying of Diffusors and Similar Receptacles. AB. Nordiska Armaturfabrikerna, Stockholm. Swed. pat. 88,861 (Nov. 9, 1934).—The bottom of the diffuser is separated into several spaces each with a separate line for the introduction of liquids.—J.F.O.

Cutter for Cutting Paper Webs Which Are Provided with Fresh Adhesive on One Side. Fromagerie Le Castel, Geneva. Ger. pat. 651,640 (June 4, 1935).—The drum carrying the web of paper is spaced a certain distance from the cutting drum.—J.F.O.

Arrangement for Fastening the Knife Boss on the Shaft of Multiple Slitters. K. R. Dienes, Vilkerath. Ger. pat. 651,271 (Feb. 28, 1936).—J.F.O.

Winder with Double Carrying Rolls. Jagenberg Werke A. G., Dusseldorf. Aust. pat. 150,175 (March 15, 1937).—J.F.O.

Electric Regulating System for Rewinders. H. T. Calonius. Svensk Papperstidn. 41, no. 11:355-356 (June 15, 1938); B. I. P. C. 8:475.—A brief illustrated description of the principle of an electric regulating system for paper rewinders is given; it is covered by the Swedish patent 85,484.—C.J. W.

Electric Drive for the Winder in the Paper Machine. Otto Kozik. Z. Papier, Pappe, Zellulose u. Holzstoff 56, no. 9:117-120 (May 15, 1938); B. I. P. C. 8:427.—The winder drive is the only section of the paper machine which requires an increasing number of revolutions per minute as the rolls build up. The tension of the web must remain constant, in order to produce uniform rolls of even hardness throughout. The whole arrangement must be simple and easy to supervise, the control reliable and economic. The speed should remain constant and not increase at the moment of a break, so that no special manipulations are required when re-starting. The article describes how electric drives are capable of fulfilling these requirements.—C.J.W.

Conveying and Piling in the Paper Industry. Papier-Ztg. 63, no. 45/46; 929-31; no. 48-978-9 (June 4, 15, 1938).—The article is an illustrated review of various cranes, trucks, and similar materials handling devices used in the pulp and paper industry. —C.J.W.

Retention of Solids on the Paper Machine Wire and Treatment of White-Water Going to the Save-Alls by the Sveen Process. F. Juell. Proc. Tech. Sect. Paper Makers' Assoc. 18:547-559 (1938).—The use of a specially prepared solution of glue for increasing the retention of fillers on paper machines is discussed, particular consideration being given to the conditions of acidity, etc., under which flocculation is best effected. Extremely small amounts of glue, varying from 1 to 3 lb. per ton of paper (depending largely on the amount of water used for sheet formation rather than on the amount of fiber present), are required and the coagulating action is extremely rapid. Experimental data collected from a number of large-scale trials indicate a marked increase in filler retention by the paper, with consequent elimination of it from the white-water. Flocculation is not limited to machine wire conditions, but continue in the sedimentation tanks and other white-water recovery equipment. For this purpose, however, the Sveen solution is usually most satisfactory when used in conjunction with the Sveen-Pederson air-flotation recovery process, which also is briefly described.—A.P.-C.

Process for the Treatment of Liquids Containing Fiberous Materials, for Example, the Back Water from Paper Machines. F. Juell, Oslo. Swed. pat. 88,699 (June 26, 1930).—A dilute solution or suspension of gelatine or animal size is the organic colloid used as the flotation medium for the separation of the fine particles.—J.F.O.

Printer and Paper

Hot Weather Paper Troubles. Charles F. Geese. Natl. Lithographer 45, no. 7:14 (July, 1938); B. I. P. C. 8:483.—Practical hints are given for overcoming some paper troubles in non-air-conditioned plants. Wavy gripper edges should be trimmed off slightly, if possible. Turning the paper on the opposite side than that on which it is shipped may help to flatten it out; since the best printing side is usually stacked face up when shipped, it is a good plan to reverse it onto another skid overnight and then reverse it again when loading it on the feeder. Fanning out can be reduced by tightening the grippers holding the ends of the sheet. No register job should ever be started without checking the press for register by printing the same sheet twice, and if the second print does not exactly hit on top of the first, no attempt to start the work should be made. The grain of the paper should run the long way of the sheet; when all these precautions do not help, the paper should be placed in a dry place overnight.—C.J.W.

Paper Conditioning. British Paper 6, no. 1:14, 17, 19 (May, 1938); B. I. P. C. 8:436.—Stretching, curling, cockling, wavy edges, and static electricity are listed as reasons for the need of conditioning paper. The theory of conditioning is to introduce moisture into the paper quickly and to obtain a balance of moisture evenly distributed in the sheet, which will remain fairly constant unless the paper be placed under extreme atmospheric conditions. The standard conditions in Gt. Britain are 65 per cent relative humidity at 65° F. The lower the initial moisture content of paper, the more easily cellulose absorbs moisture but, after reaching 5 per cent, the absorption is much slower. Paper containing a low percentage of loading appears to absorb the moisture slightly better than heavily loaded sheets. When conditioning unsized paper, no apparent increase in moisture absorption is found. Reference is then made to a modern conditioning plant which offers the following advantages to the user of paper. The paper lies flat, all curling and cockling is removed, as well as static electricity, and the user can rely on getting similar results regarding stretch and flatness. The conditioning of paper involves expense for the paper maker, but the results will repay his efforts.—C.J. W.

Effect of Chemicals in Papers on Printing Ink. Mander Brothers, Ltd. Indian Print and Paper 3, no. 4:28 (June, 1938); B. I. P. C. 8:490.—Reference is made to the fact that brightly colored inks are very susceptible to the action of acids and alkalies and that difficulties sometimes occur on this account. Certain coated art papers, strawboard, etc., have a decided alkaline reaction, the latter especially in the presence of moisture. When doubtful, a test should be made on the material to be printed upon, and the manufacturer should be informed when printing inks are required which have to withstand the action of acids or alkalies.—C.J.W .

Sufficient Characterization of Papers. Papier-Ztg. 63, no. 39:795 (May 14, 1938); B. I. P. C. 8:433. —Attention is drawn to the importance of machine and cross direction, and wire and felt side of papers, especially in the printing trade. It should become a universally accepted custom that each paper package carry two indications as to this effect on the wrapper. A sketch illustrating such a package is included. Reference is also made to another inconvenience in paper packaging. When paper has a tendency of curling toward one side instead of lying flat, it is sometimes thought that the trouble may be overcome by packaging one section of the contents with the curl toward one side, the other section with the curl in the opposite direction, and so forth. This does not cure the trouble and makes the paper unsuitable for feeding by machinery into the printing press. Such papers should always be wrapped with the curling side of all sheets lying in the same direction. The printer can then adjust his feeder to this deficiency and use the equipment instead of having to feed the sheets by hand.—C.J.W.

Paper Specialties

Process for the Manufacture of a Water Repellant Cigarette Paper. Schoeller & Hoesch G.m.b.H., Gernsbach. Ger. pat. 652,491 (Feb. 24, 1935).—The cigarette paper, in a finished or half finished condition, is immersed in an aqueous emulsion or solution of beeswax in which there is mixed a small quantity of honey, so that 1 to 10 per cent is absorbed.—J.F.O.

Process for the Manufacture of Cigarette Paper. Scholler & Hoesch G.m.b.H., Grensbach. Ger. pat. 652,124 (Feb. 24, 1935).—For the production of a water repelling cigarette paper with a non-flaking ash, the paper is impregnated with an alkaline stearate solution and if necessary with the addition of beeswax in an emulsified form.—J.F.O.

An Electro-Washing Process. S. Komagata. Trans. Electro Chem. Soc. 73:271-281 (1938).—Single- and multiple-compartment electrolytic cells are described. The process is applicable to the washing of vulcanized fiber, paper pulp and photographic plates and films.—A.P.-C.

Reinforced Paper. H. Kleibaumhüter and P. Kleibaumhüter. Brit. pat. 472,871, (March 26, 1936); addition to Brit. pat. 446,049.—Plant is claimed for continuously producing paper, reinforced with endless strands of manila or sisal fibers, in combination with a paper machine. The strands are arranged to lie parallel to one another in two layers forming a loose fabric, e.g., the first in the direction of travel of the paper and the second deposited in zig-zag manner over the first. The fabric is then covered on both sides with a pulp suspension, e.g., by passing it over cylinder moulds.—A.P.-C.

Paper. Gustave Risler. Fr. pat. 48,167. (Nov. 3, 1937); addition to Fr. pat. 813,308.—The pressure used may vary from 50 to 400 kilos per m. The paper is subjected after compression to an immersion in water, dried and used directly in the manufacture of high-voltage electric cables, etc.—A.P.-C.

Permeability of Impregnated Papers. E. E. Halls. Ind. Chemist 13:382-385 (1937).—It is considered that the rate of water penetration through paper has no general direct relation to the thickness of the paper and curves are given to support this statement. Instead, the rate of penetration is largely governed by the spaces (pores or interstices between or in the fibers, etc.) available for transmission and the more such spaces are reduced (e.g., by an impregnant) the less will be the rate of water penetration.—A.P.-C.

Oil Oxidation in Impregnated Paper. J. B. Whitehead and T. B. Jones. Elect. Eng. 56:1492-1501 (1937).—Cellulose paper impregnated with a cable oil containing various amounts of oxygen was heated at 80° C. for 200 hrs. and changes in power factor, capacitance, and ionization factor were determined. Data are shown in curves. The relative unimportance of small amounts of oxygen as the cause of changes in electrical properties was established.—A.P.-C.

The Decoration of Papers. Kartonnagen- u. Papierwaren-Ztg. 42, no. 20:216; no. 21:221-2 (May 20, 27, 1938); B. I. P. C. 8:437.—Different methods for embossing, lacquering, producing a glossy surface by means of gelatin or cellulose coatings, etc., are described.—C.J.W.

Pulp Wadding. Wochbl. Papierfabr. 69, no. 11:241; no. 15:327; no. 16:349 (March 12, April 9, 16, 1938); B. I. P. C. 8:438.—The inquirer manufacturers pulp wadding prepared by means of a creping doctor. For special purposes, the ordinary creping is not sufficient, and a high-creped product is required. How can the latter be produced? High-creping for packaging purposes can be obtained by supplying to the creping doctor a paper web with at least 20% less moisture than in the case of surgical cotton. The thickness of the doctor blade and its angle relative to the drying cylinder, as well as the width of the paper machine, play an important rôle. Not every pulp is suitable for creping purposes; it should be naturally soft and absorbent, not having been subjected to beating. This answer suggests very high moisture contents, about 10% abs. dry, for the web reaching the drying cylinder. The last answer advises the use of a harder pulp, the addition of 2-3% of starch to the beater, and a special doctor blade with fine notches.—C.J.W.

Coated Paper. The Champion Paper and Fibre Co. Brit. pat. 478,804 (Jan. 25, 1938); addn. to Brit. pat. 403,852. The process of 403,852 is modified in that the coating material is applied to and excess removed from the paper web after it has been pressed to remove some water but before drying, e.g., between the first and second presses. Sized or unsized paper may be coated with clay, calcium carbonate or titanium dioxide in combination with casein or starch, e.g., a paper consisting of soda and sulphite pulps with clay filling is coated with a suspension of clay, calcium carbonate and casein.—A.P.-C.

Paper-Coating Apparatus. Russell S. Bracewell. Can. pat. 372,825 (March 29, 1938).—A traveling paper web is coated with color by operating a centrifugally acting discharge surface at a speed sufficient to discharge color on to the web as a finely divided spray, and supplying color to the discharge surface by projecting the color onto it from a second centrifugally acting discharge surface having a velocity of discharge less than that of the first surface. An apparatus is described.—A.P.-C.

Apparatus for Coating Paper Webs. Peter J. Massey and Consolidated Water Power and Paper Co. Brit. pat. 477,824 (Jan. 3, 1938).—Coating material is smoothed, worked, distributed and conveyed toward a coating-applying roll by a set of distributing rolls in which adjacent rolls are of different diameters and all the rolls are driven at the same peripheral speed.—A.P.-C.

Coating Paper and the Like. P. Boyden. Brit. pat. 472,163 (Feb. 17, 1936).—Paper or board is coated with cellulose acetate solution, which is then dried by evaporation; 10 per cent of gum arabic (on the weight of cellulose acetate) and 10 per cent of resin are incorporated in the solution to act as adhesives. Fireproofing agents (triphenyl phosphate) and plasticizers may also be added. A waterproof coating is claimed.—A.P.-C.

Greaseproof Paper. Walter R. Weeks. Fr. pat. 824,061 (Feb. 1, 1938).—Kraft paper pulp is treated at a temperature up to 100° C. with an aqueous solution or suspension of an alkali or alkaline-earth hydroxide, which may contain a neutral salt. The proportion of alkali or alkaline-earth hydroxide should not exceed 7 per cent calculated on the dried pulp. Treatment with chlorine or a reagent which yields chlorine, e.g., calcium hypochlorite, may follow. The pulp is then washed, beaten in a hollander, and converted into paper in known manner.—A.P.-C.

Chemical Stack Losses and Their Recovery in the Soda Process*

By Roy P. Whitney[1] and J. Edward Vivian[2]

Abstract

This paper presents the results of a test to determine the chemical stack losses from a Babcock and Wilcox-Tomlinson recovery furnace operating on black liquor from a 105 ton soda pulp mill, and the effectiveness of a Cottrell precipitator in recovering the dust carried out of the furnace.

The dust content of the flue gas was determined at a point between the furnace and the precipitator, and at the discharge from the precipitator. Measured samples of flue gas were withdrawn, and the dust was absorbed in water, using finely woven cloth bags to disperse the gas stream. Sampling traverses were made, and the gas was withdrawn at duct velocity. The duct velocity and the total flue gas flow were determined by means of pitot tubes.

The results indicated that the dust leaving the furnace and entering the Cottrell amounted to 304 pounds of sodium carbonate per hour, equivalent to 40 pounds of Na_2O per ton of pulp, or 4.4 per cent of the chemical input to the furnace. Losses from the Cottrell were 39 pounds of sodium carbonate per hour, or 5.2 pounds of Na_2O per ton of pulp, amounting to 0.57 per cent of the chemical input. The precipitator was therefore found to remove 87 per cent of the carbonate which entered. The value of the recovered dust was $57 per day.

In the manufacture of pulp by either the soda or the sulphate process, the black liquor recovery cycle is of major importance, since a high percentage recovery of the sodium compounds used in digestion must be maintained for economical operation. While the cycle differs in many details in various mills, the essential operations are well standardized.

The recovery cycle begins with the black liquor which is removed from the digested pulp. Some means of washing is usually employed which will maintain as high a solids content as is practical. This black liquor is evaporated to 50 to 55 per cent solids, and is then burned in recovery furnaces, where the water and organic material are driven off, and the sodium is converted principally to the carbonate. The sodium carbonate solution resulting from the leaching or dissolving operation is causticized with lime to regenerate the desired sodium hydroxide.

One of the major losses of sodium compounds from this cycle occurs from the recovery furnace, as dust in the flue gas. In a soda pulp mill, this dust is principally sodium carbonate, and in a kraft mill it is mainly sodium sulphate. The mechanism of this loss has usually been considered to be one of mechanical entrainment of particles, although Day *(2)* has presented results which indicate that it is rather an actual volatilization of chemicals in the furnace. Whatever the mechanism, the magnitude of the loss varies considerably in different mills, depending upon the type of furnace and the operating conditions. Results have been published *(3, 4, 5)* which show losses of from 20 to 85 pounds of Na_2O per ton of pulp, or as high as 7 per cent of the chemical input to the furnace. In general, losses from the rotary-type furnaces have been found to be lower than from the newer spray-type furnaces.

Because of the magnitude of these stack losses, many methods have been proposed for removing the dust from the flue gas. Of these, probably the most efficient is the use of Cottrell precipitators, of either the wet or the dry type, depending upon the condition of the flue gas which the precipitator must handle. These precipitators have been reported *(4, 5)* to recover from 90 to 95 per cent of the dust in the flue gas.

This paper presents the results of a test, carried out in a mill producing approximately 105 tons of soda pulp per day, to determine the stack losses from a Babcock and Wilcox-Tomlinson furnace and the effectiveness of a Cottrell precipitator in recovering this dust. Previous results on this type of furnace operating on kraft black liquor *(3, 6)* have shown losses of from 5 to 6 per cent of the chemical input to the furnace. No results have been published regarding the losses from such a furnace operating in a soda pulp mill.

The layout of the furnace, auxiliary equipment, and Cottrell precipitator is shown in Fig. 1. Flue gas, formed in the combustion space of the furnace, passes through the boiler section, economizer, air preheater, and then through the spray chamber where it is subjected to a spray of dilute sodium carbonate solution. An induced draft fan then forces the gas through the Cottrell precipitator. The precipitator is of the wet type, containing 8-inch steel tubes, continuously wet with the same dilute sodium carbonate solution which is used in the scrubber. The flue gas passes up through these tubes and is discharged

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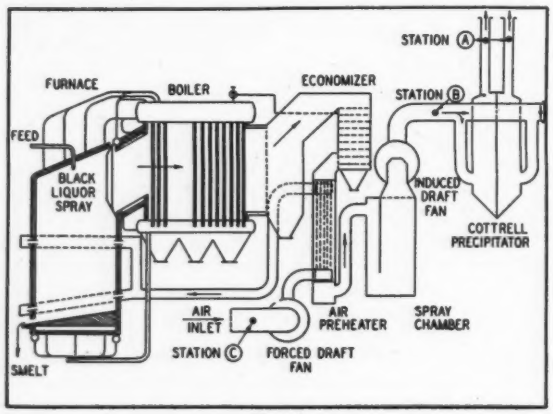


FIG. 1
Tomlinson Furnace and Cottrell Precipitators

through two stacks. The furnace was designed to burn the black liquor from 115 tons of pulp per day, and the Cottrell precipitator to handle 32,000 cubic feet of gas per minute, at a potential difference of 66,000 volts.

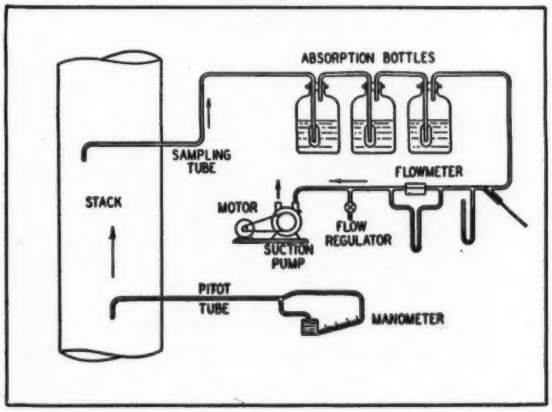
Procedure

The test procedure required setting up two main stations A and B, located as shown in Fig. 1. Station A test equipment was installed in duplicate, one set for each of the two stacks from the Cottrell. This equipment, shown in Fig. 2, consisted of a sampling tube located in the stack in such a manner that traverses could be made on two axes at right angles. The nozzle of the tube had an inside diameter of one-eighth inch. This sampling tube was connected to the dust absorption train, consisting of three two-liter bottles connected in series, and each about one third full of distilled water. The gas from the sampling tube was introduced below the surface of the water and dispersed as small bubbles by means of closely woven cloth bags. The absorption train was connected to a calibrated capillary flowmeter. A suction pump was used to draw the gas sample through the whole equipment. Located at the center of the stack ahead of the sampling tube was a pitot tube for which the pipe factor had been determined from two 10-point traverses at right angles. Readings of the pitot tube were taken on an inclined manometer.

A twenty-four hour test was made, during which pitot readings, flowmeter readings, and stack gas temperatures were taken every four minutes. Sampling traverses were carried out in such a manner that two complete 10-point traverses on each axis were made every six hours. This required that the sampling tube be held at a given point for eight minutes. The dust was continuously absorbed for six hours, after which the absorption train was replaced by a fresh one.

The carbonate solutions collected in the first two absorption bottles during the six hour period were mixed and the whole (about 3 liters) evaporated to 500 cc. The solution in the third bottle was evaporated to 250 cc. Aliquot portions of both solutions were then titrated for carbonate with standard hydrochloric acid. The solution in the third bottle was kept separate in order to be certain that all the dust which could be absorbed by water was being determined. The amount of carbonate in this third bottle was usually negligible.

FIG. 2
Test apparatus



In sampling two-phase flow such as exists in the stacks, it is generally believed to be necessary to sample at a velocity equal to that in the stack at that point. If the sample velocity be less, the inertia of the dust particles will tend to give too high a dust loading in the sample. Conversely, too high a sample velocity may give too low a dust loading in the sample. A recent paper by Anderson *(1)* has indicated that the sampling velocity should be some 5 to 10 per cent lower than the stack velocity, and that when the two velocities are equal, the dust loading of the sample may be expected to be about 3 per cent low. Since these variations are well within the accuracy of the present work, it was decided to sample as near stack velocity as possible.

In order to sample at stack velocity, a plot was prepared from pitot traverses in advance of the test giving the necessary flowmeter reading at any point for a given central pitot reading. Using this plot, it was possible to adjust the rate of sampling for each point on the traverses as well as for fluctuations in stack velocity, every four minutes.

At Station B, at the duct entering the Cottrell, conditions of flow and dust loading of the flue gas were such that the general test procedure given above had to be somewhat modified. Because of the arrangment of equipment, causing fluctuating gas flows, it was found to be impossible to obtain reliable pitot reading and traverses. In the absence of better technique, sampling velocities were maintained at the average duct velocity. The dust distribution was obtained by making two 4-point traverses over the duct (two points on each axis) during the twenty-four hour run. The sampling tube was left in position for three hours and the dust absorbed continuously. Then the sampling tube was reset and another absorption train used for the next three hours. Average duct velocity was calculated from the combined flows as measured at Station A. In all cases, condensation in the sampling tube and connecting lines was taken care of by washing the lines into the absorption train whenever the latter was changed.

In addition to the measurements already described, Orsat gas analyses were made every half hour at Station A and also at a point between the boiler and the economizer. The air supplied to the furnace was

TABLE I

RESULTS AND OPERATING DATA OF THE TEST

Production rate—tons pulp per day	105
Maximum capacity—tons pulp per day	115
Black liquor fed to furnace—pounds per hour	22,000
Gravity of black liquor—deg. Be' at 224 deg. F	33
Density of black liquor—pounds per cubic foot at 224 deg. F.	80.6
Sodium carbonate content of black liquor—per cent	31.4
Chemical input to furnace—lbs. Na_2CO_3 per hr.	6,900
Entering Cottrell precipitator	
Dust content of flue gas—pounds Na_2CO_3 per hr.	304
—pounds Na_2O per ton pulp	40
—per cent of chemical input to furnace	4.4
Dust loading—grains per cubic foot at flue conditions	1.08
Leaving Cottrell percipitator	
Dust content of flue gas—pounds Na_2CO_3 per hour	39
—pounds Na_2O per ton pulp	5.2
—per cent of chemical input to furnace	0.57
Dust loading—grains per cubic foot at flue conditions	0.14
Efficiency of Cottrell precipitator in removing dust per cent	87
Flue gas flow at Cottrell—cubic foot per hour at 155 deg. F (saturated with water)	1,970,000
Air entering furnace—cubic feet per hour at 53 deg. F. (dry)	947,000

Average gas analyses	After Boiler	At Cottrell
CO_2	11.8	9.4
CO	0.0	0.0
O_2	5.9	9.3
N_2	82.3	81.3
	100.0	100.0

measured by means of a central pitot tube at Station C (Fig. 1) for which the pipe factor had been previously determined. The rate of black liquor feed was read from the plant meter.

Discussion

It was the original intention in this work to make use of the so-called balanced sampling tube. With this instrument, a static pressure tap in the duct and another in the sampling tube itself are connected across a differential manometer. It can be shown that when this manometer indicates no pressure difference, the average velocity in the sampling tube is equal to the duct velocity at that point. These tubes were found to be quite unsatisfactory because of the plugging of the static holes, and they were discarded. The method which has been described was found to be much more satisfactory, and to give more reliable results. On relatively dry dusts which do not have a tendency to cake, the balanced tubes would probably be very convenient.

The use of cloth bags submerged in water as a means of absorbing the dust in the sample has been found to be very satisfactory on this type of dust. Repeated tests have shown that, when several bottles are used in series, practically complete absorption takes place in the first two. For the purpose of comparing various commonly used methods of dust absorption, tests have been carried out with the cloth bags submerged in water; 35 cc. alundum thimbles submerged in water and used in the same manner as the cloth bags; and towers 1¼ inches in diameter by 15 inches tall packed with glass wool. Gas samples were passed through various combinations of these units and the dust absorbed in each was analyzed for sodium carbonate only. The following results are typical of those which were obtained.

It is apparent that the cloth bags and the alundum thimbles are equally effective means of removing the dust from the gas stream, although the lower pressure drop through the cloth bags makes them preferable for test work. In other industries, a general technique of dust absorption has been the use of dry paper thimbles. Qualitative tests have shown that for the type of dust encountered here, the paper thimbles are not an efficient means of removing the dust from the gas. The fact that the alundum thimbles, which are similar to paper thimbles, are as effective as the cloth bags probably depends on the fact that they act as a means of dispersing the gas so that efficient absorption by the water can take place, and not as a means of mechanically trapping the dust. Although the glass wool towers appear to be less effective in absorbing the dust, it is possible that this might be remedied by the use of towers of larger diameter.

With the cloth bags, the decrease in efficiency of absorption as the sampling rate is increased is noticeable (see Table II). For comparison, during the test on the Tomlinson furnace, the highest sampling rate used was 12 cubic feet per hour, corrected to 32 deg. F, 1 atm. Hence this decrease in efficiency of absorption was not significant in this test.

TABLE II

Absorption train	Rate of sampling cu. ft./hr., corrected to 32 deg. F., 1 atm	Pressure drop through train in. Hg.	Per cent of total Na_2CO_3 absorbed in unit No: 1	2	3	4
4 cloth bags	7.2	3.4	98.1	1.9	0	
	11.0	5.3	95.4	4.6	0	0
	14.7	6.4	92.8	7.2	0	0
2 alundum thimbles and 1 cloth bag	7.6	14.0	95.6	4.4	0	
4 glass wool towers	5.2	1.2	88.0	8.5	3.5	0

In presenting the results of this test, only the sodium carbonate has been considered as loss. Actually, the dust contained 81.9 per cent sodium carbonate, 12.7 per cent sodium chloride, and 5.4 per cent sodium sulphate. However, in this plant, electrolytic caustic soda is used to make up the soda losses, and the chloride and probably the sulphate are introduced in that manner. These compounds build up in the system until the losses are equal to the input, and they do not therefore represent a loss of available soda.

As a means of checking the rate of flow of flue gas through the stacks, the air input to the furnace was measured. These data were supplemented by gas analyses after the boiler and at the Cottrell, and the results showed that air leakage into the economizer, air heater, and spray chamber accounted for 20 per cent of the total flow. If the rate of flow of flue gas at the Cottrell be calculated from the entering air by means of a nitrogen balance, correcting for air leakage, the figure obtained is 1,880,000 cubic feet per hour, which checks the value of 1,970,000 given in the results to within 5 per cent.

From a consideration of the test work and the methods used, the figures for the carbonate entering and leaving the Cottrell precipitator are believed to be accurate to within 10 to 15 per cent. These possible errors would make a maximum error of 4 per cent in the efficiency of the precipitator.

The figure for the chemical loss from the Tomlinson furnace, 4.4 per cent of the chemical input, is in general agreement with other values which have been obtained on this type of furnace. As has been pointed out, other tests *(3, 6)* have shown a 5 to 6 per cent loss when operating on kraft black liquor. These results indicate that the losses may be expected to be approximately 5 per cent, regardless of which pulping process is used.

It is apparent from the results of this test that the Cottrell precipitator is very effective in recovering the sodium carbonate lost from the furnace. Based on a cost of $18 per ton, the carbonate which the precipitator removes from the flue gas represents a saving of $57 per day. These results are in general agreement with others which have been published. Considering their low fixed charges and operating costs, the installation of electrical precipitators appears to be well justified, particularly for mills which are operating spray-type recovery furnaces.

Acknowledgment

The results presented in this paper were calculated from data obtained in test work by students in the M.I.T. School of Chemical Engineering Practice. Their cooperation in this effort is acknowledged. The authors wish to express their appreciation of the cooperation of the Penobscot Chemical Fibre Company during the test and of their permission to publish these results.

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Sanitary Quality In Fabricated Paper*

By J. R. Sanborn[1]

Abstract

Production, operating efficiency and quality in pulp and paper manufacture are intimately related to the problem of microbiological control. Excessive development of microorganisms in mill systems invariably results in economic losses and also in undesirable contamination of pulp and paper, which usually affects the sanitary condition of fabricated products.

From the standpoint of suitability of paper wrappers and containers for perishable foods, it is important to eliminate sources of mill contamination, employ bactericidal treatments effectively, exercise mill sanitation and cleanliness, properly protect finished paper, and carefully check, through mill laboratories, the efficiency of microbiological control and the bacterial content of fabricated paper.

In cases where excessive development of microorganisms is allowed to take place during pulp manufacture, operation, production and quality difficulties frequently arise. It is sound and economic mill practice to maintain effective control over the development of microorganisms in mill systems. Control programs followed out carefully and consistently result in savings in time, increases in production, better pulp yields, improved quality, higher sanitary ratings in grades which require or merit high sanitary standards, and more adequate fulfillment of needs of customer and user.

Unity of Sanitary and Economic Objectives

Public health interest in the sanitary quality of fabricated paper is closely related to the economic interests of the industry. Pulp and paper mills are concerned with matters of production, operation efficiency, and quality. The microorganisms that invade mill systems with water supplies and raw materials and develop there are important agencies affecting production, operation, and quality. The development of organisms readily takes place unless this is effectively prevented through the use of carefully devised methods of control. Excessive development of microorganisms invariably results in economic losses; it also results in contamination of pulp and paper with undesirable organisms, with products having objectionable odors, and with slimy masses which are deleterious to high quality paper. Paper for the packaging of perishable foods should, therefore, be as free as possible from forms of contamination which may be injurious to food quality. While the presence of these microorganisms does not mean danger from disease, it does indicate possible sources of incipient food spoilage, carelessness in processes of pulp and paper manufacture and handling, and general unsuitability for direct contact with carefully prepared and processed foods. As far as the use of paper products by the food industry is concerned, there is sufficient understanding and appreciation of the need for suitable food packaging materials and proper handling of them to justify the setting up of standards and specifications which should result in benefits to both industry and consumer.

Problems in improper paper packaging of milk (the most perishable food), butter, ice cream, meat and bread have already arisen with affect keeping quality, odor, flavor and palatability. Moreover, carelessness in handling packaging materials as well as carelessness on the part of food handlers may result in the transfer of undesirable even pathogenic organisms from handler to consumer.

Requirements of Sanitarians

The sanitarian is interested in the manufacture of pulp and paper used in the fabrication of articles for medical, household, personal and food requirements. The following items are important from his point of view:

1. The sanitary quality of raw materials used in manufacturing operations.
2. Adequate purification of raw water supplies and reused white water.
3. The bactericidal treatments used by pulp and paper mills to control the development of micro-organisms throughout mill systems.
4. The production of paper which is free from foreign matter, and low in dirt and bacterial count.
5. The protection of finished paper from subsequent contamination due to dirt, handling and wetting.
6. The sanitary facilities and methods used by converters and food handling establishments to insure proper handling and storage of paper products.
7. All records and tests that reveal the care and microbiological control utilized in fabrication and the specific suitability of paper wrappers and containers intended for food products.

The Meeting of Sanitary Requirements

The branches of the pulp and paper industry that are concerned with the manufacture of paper wrappers and containers for perishable foods have undertaken programs of quality control designed to meet sanitary requirements and the specific quality needs of each food product. The items thus far included in these programs include:

Adequate Purification of Raw Water Supplies.

This includes essentially the same treatment that mills regularly utilize for efficient operation and quality specifications. So-called "wet slime" from rivers, objectionable suspended matter, and bacterial contamination are removed through processes of flocculation, sedimentation, sand filtration, and chlorination. Some mills employ all of these procedures in ways comparable to the treatment of municipal drinking supplies. In other cases, it may not appear necessary to include all of these processes. The sanitary reason for raw water purification is to eliminate microorganisms that may either contaminate pulp and paper directly or colonize in mill systems, establishing numerous sources of abundant contamination.

Use of Pulp.

While virgin stock only should be employed in containers for such perishable foods as milk and cream, studies are being made to determine what types of manufactured papers that have not been put into commercial use or under what conditions mixed papers may, without danger, be used as filler in containers for less perishable foods. Virgin pulp is either used directly from manufacturing or bleaching plants or, if stored, is adequately protected, under dry conditions, from contamination.

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[1] Member TAPPI, New York State Agricultural Experiment Station, Geneva, New York.

Quality of Wash Water.

While chemical and mechanical pulps are rendered essentially sterile during digestion and grinding *(1)*, the washing and thinning of this stock with contaminated process water completes a cycle of microbiological development which, if allowed to go on unchecked, leads to losses in production, time, and quality. Preventive measures include cleanliness, effective use of steam and hot water, and the employment of bactericidal treatments such as chlorination. Constant maintenance of a proper residual of chlorine in fresh water and white water lines will aid in keeping a clean mill system clear of growth and prevent excessive multiplication of microorganisms.

The selection of bactericidal treatments and their proper use depend upon the local situation and the nature, distribution and condition of predominating microorganisms. The following figure indicates some of the ways in which excessive microbiological contamination affects operation efficiency, production, and quality. It also points to the role of bactericidal treatments in maintaining satisfactory reductions in the number of organisms present at focal points during pulp manufacturing processes. These focal points represent successive steps in the manufacture of pulp from digesters or grinders to the paper machines.

Maximum Bacterial Development

The counts presented in Fig. 1 are averages, indicating parts of a process where maximum bacterial development may occur. These results were obtained, in the majority of cases, from mills utilizing both ground wood and sulphite systems. It will be noted that, according to these findings, the greatest development of microorganisms usually takes place during advanced stages of pulp manufacture, reaching a maximum at deckers, white water chests, main white water lines or head boxes.

Microbiological Control

Fig. 2 illustrates the degree of microbiological control which some mills regularly maintain during pulp manufacture. The situation at a few of the mills is such that essential sterility can be maintained throughout pulp and white water systems.

Where there is effective control over the microorganisms in a pulp and paper mill, production and

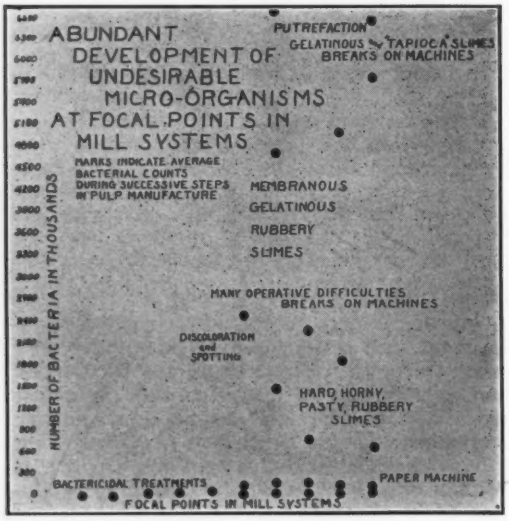
ABUNDANT DEVELOPMENT OF UNDESIRABLE MICRO-ORGANISMS AT FOCAL POINTS IN MILL SYSTEMS
BARRS INDICATE AVERAGE BACTERIAL COUNTS DURING SUCCESSIVE STEPS IN PULP MANUFACTURE
NUMBER OF BACTERIA IN THOUSANDS
PUTREFACTION
GELATINOUS TAPIOCA SLIMES BREAKS ON MACHINES
MEMBRANOUS
GELATINOUS
RUBBERY
SLIMES
MANY OPERATIVE DIFFICULTIES BREAKS ON MACHINES
DISCOLORATION and SPOTTING
HARD HORNY, PASTY, RUBBERY SLIMES
BACTERICIDAL TREATMENTS
PAPER MACHINE
FOCAL POINTS IN MILL SYSTEMS

Fig. 1

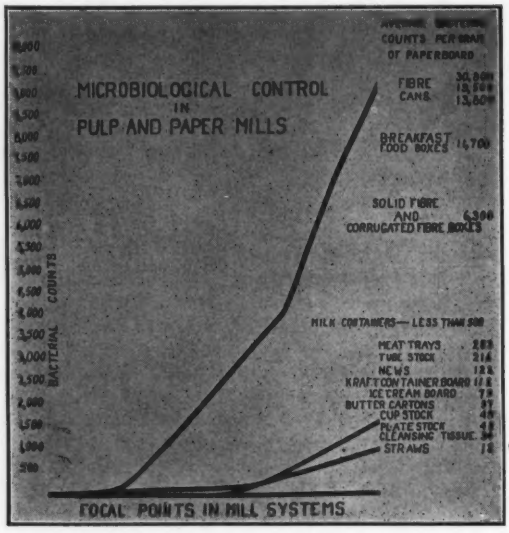

Fig. 2

operation efficiency show definite improvements. Finished products also reveal quality benefits which are of interest to customers and public health officials. These benefits include cleanliness; improved formation; freedom from slime spots and discoloration; and low bacterial counts. Fig. 2 also indicates the results of bacteriological studies that have been made at this laboratory of various grades of paper and paper products. Determinations of the bacterial counts in the paper employed in the fabrication of various paper articles for personal, household, and food uses furnish a helpful means of judging the sanitary quality of materials used in pulp and paper manufacture, the care utilized in procedures, and the probable sanitary condition of the mill itself.

Conclusions Drawn

The conclusions drawn by bacteriologists are based not only upon bacterial counts, but also upon identification and recognition of specific microorganisms with whose origin, proclivities and economic importance he is ordinarily familiar. Considerable attention is being devoted to the subject of bacterial counts in paper, and various disintegration devices are under investigation which will convert paper and paperboard under aseptic conditions to uniform pulp suspensions suitable for bacteriological plating. Mills are finding it desirable and helpful to maintain periodic checks on the bacteriological condition of pulp and paper. These examinations yield information as to seasonal variations in water supplies, fluctuations in counts in mill systems, effectiveness of chlorine or other bactericidal agents, benefits of improved sanitary practices, and standards which may be of interest or value in connection with paper specifications.

Advantages

The advantages in efficiency, economy, and quality which all types of mills secure from operating under a program of microbiological control is resulting in a widespread interest in the details of such a program. Realizing that continued operation depends upon some degree of control over the development of microorganisms, nearly all pulp and paper mills employ procedures which more or less restrict microbiological activities. Many mills have found that instead of

exercising just enough control to keep the mill running which frequently amounts to expenditures of money with no actual control whatsoever, the economical and reliable procedure is to maintain low bacterial counts throughout the mill and receive tangible evidences of improvements through savings in time, increases in production, better pulp yields, improved quality, higher sanitary rating in grades which require or merit high sanitary standards and more adequate fulfillment of needs of customer and user, particularly where food packaging and kindred applications involving convenience, satisfaction and well-being of consumer are concerned.

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(1) *Jour. Bact.* 26;373 (1933).

The Fundamentals of Instrumentation *

By J. A. Van den Akker [1]

Introduction

That there is a need for instrumentation—and for improved instrumentation—in the pulp and paper industry cannot be denied by anyone interested in augmented efficiency, improved uniformity of products, and improved products. Where instrumentation is in bad odor, the reasons for adverse feelings and high skepticism are often well founded: The use of poorly designed instruments, or of beautifully finished and well designed instruments based on poor methods and inadequate research, has led to grief. Unfortunately, the accuracy of an instrument is not apparent and is, in fact, difficult to determine; contrasted with accuracy is precision, which is a measure of the errors observed in testing reproducibility of instrumental readings irrespective of inaccuracy of measurement of the property or variable which the instrument presumably measures. Too much attention has been paid to precision, and too many instruments have been sold on the demonstrated claim that readings may be reproduced to one-tenth of one per cent; in some such cases, unhappily, the basic error in the measurement of the property or variable which it is desired to evaluate may be fifty per cent! Although precision and freedom from personal error are desirable and necessary, we should perhaps regard precision as a low quality to be taken for granted and devote more critical thought to accuracy.

While a skeptical approach to the problem of instrumentation on the part of mill men is to be highly recommended, it is unfortunate that, in some quarters, skepticism has swung from an initially inadequate level to such a high point as to exclude some of the really excellent instruments available for control and testing in the mill.

Variables and Properties

It is well known that there is an impressively large number of variables in the manufacture of paper. Instruments are used in the mill to control important variables and to evaluate the properties of the finished product. The properties of paper are variables, and a general discussion of measurement of the properties would suffice, at least for our present purposes, for a general discussion of the measurements of the variables of manufacturing operations. Hence, for simplicity of discussion we shall speak of the measurement of a quantity when we wish to discuss the instrumentation of control and testing generally.

A brief discussion of the meaning of the words "variable" and "property" would seem to be in order. A variable is generally thought of as a quantity which may change and to which a numerical value may be assigned through measurement; even though a quantity is not actually evaluated by instrumental means, one usually thinks of it as a variable if hypothetically it could be measured. The term "property," as it relates to paper, is not quite so easily defined. Literally defined, a property is "that which is proper to anything," i.e., belongs to the "natural or essential constitution"; thus it is a property of paper to be fibrous. One may extend this definition slightly to say that a property is an essential attribute of a body which enables one to differentiate that body from other bodies. Differentiation or comparison is effected by evaluation of the properties by either subjective or instrumental means.

When one considers the array of paper properties, it is recognized that certain properties are to be described as "fundamental"; certain other properties ("use properties") originated in the use of paper, and it may be possible to consider a third group of properties which have meaning only in connection with the chemical and physical testing methods which define them. One occasionally feels that the adjective "fundamental" is overworked and that a group of scientific or technical men would have difficulty in arriving at a definition of the word satisfactory to everyone. The writer would not presume to set forth a definition free of objection, but he shares the view that a property or a quantity is fundamental when it may be scientifically defined; one is tempted to go further to state that a quantity is fundamental if it may be regarded as one which figures in the determination of more complex quantities. If the quantity is fundamental it is in most cases mathematically related to other fundamental quantities and may be calculated from measurements made upon those quantities. Good illustrations of fundamental quantities are the optical characteristics of a sheet of paper, e.g., the scattering coefficient, the absorption coefficient, and reflectance. From reflectance measurements, the two coefficients may be calculated by means of definite mathematical relationships. Another good illustration is flexural rigidity of a strip of the sheet having unit width; this quantity is defined as the product of the modulus of elasticity (for the appropriate direction in the sheet) and the moment of inertia of the section of a strip of unit width, and it is calculated from stiffness measurements. The modulus of elasticity, another fundamental quantity, may be calculated from stress-strain data as well as from stiffness measurements.

The use properties form a group of evident impor-

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[1] Research Associate, The Institute of Paper Chemistry, Appleton, Wis.

tance. Illustrations of such properties are erasability, tearing strength, and rattle. It should not be inferred that all use properties are not fundamental. In at least an indirect way, all fundamental properties have important bearing on the properties of paper in use, and several such properties are directly related to use; to mention but two, tensile strength and reflectance may be regarded as use properties as well as fundamental properties. As a general rule, however, a property whose concept arises in use is of a complex nature, that is to say, a use quantity which it is desired to measure depends upon the values of several other properties, and, in general, the mathematical nature of this dependence is unknown. A good example of this is found in the use property of writing papers known as erasability. We know in a general way that some of the properties which determine this property are: (*a*) resistance to abrasion, (*b*) resistance to penetration of ink, (*c*) the property of the sheet to develop fuzz when abraded, (*d*) the property of the sheet to retain its "finish" after abrasion, and (*e*) the property of the sheet to retain its writing quality after abrasion. If one desires a single numerical value for expression of erasability, it is obvious that a mathematical equation relating erasability, *E*, with the above quantities *a*, *b*, *c*, etc., must be developed. The nature of this hypothetical equation would, of course, have to be deduced from experimental data on the several quantities *a*, *b*, *c*, etc., and from data on the subjective judgments of a group of persons competent to evaluate erasability. The complexity of this hypothetical procedure is somewhat discouraging, but a somewhat more disturbing fact is that the constants of our mathematical equation would have values depending upon the tastes of our particular group of judges. Perhaps a second group would put much more emphasis on *a*, the resistance to abrasion, and generally different emphasis on the remaining quantities involved in the subjective estimation of erasability. Therefore, in thinking of certain use properties, we must not merely consider them to be dependent upon several other properties; it becomes necessary to investigate how the nature of the dependence is influenced by personal factors.

Considerations of this sort were made by the Subcommittee on Instrumentation Research of the American Paper and Pulp Association nearly two years ago in a discussion of the property known as whiteness. While it is known that whiteness is judged by the approach of color to the ideal white, and it is known that whiteness depends upon brightness, hue, and saturation, nevertheless it was considered futile to attempt to find a formula which would yield a *single-valued* measure of whiteness of *paper*. The reason for this conclusion is found in the fact that the way in which whiteness would be mathematically determined by brightness, hue, and saturation would depend on personal preferences for hue; one group of observers would have a natural preference for a yellowish hue; others would prefer a bluish hue. As this matter now stands, white papers are treated as colored, and complete specification of brightness (i.e., visual efficiency), hue, and saturation is given. It is probably inescapable that several of the use properties must be expressed by a set of two or more numbers.

Methodology of Instrumentation

Given a property (or variable) to be measured, how may one obtain a correct numerical evaluation? An instrumental determination yields a number; the number may be a pure or dimensionless number, or it may have definite dimensions or units. In better words, the instrument literally measures some definite quantity such as angle, force, time interval, energy or work, momentum, length, light intensity, etc., and the quantity actually measured by the instrument may, or may not, be the same kind of quantity which it is desired to evaluate. Thus the measurement may be either direct or indirect. An example of direct measurement is found in a determination of tensile strength (as defined in the pulp and paper industry); the quantity to be evaluated is a force, and the quantity actually measured by a tensile tester is a force. An example of indirect measurement is found in the usual method for evaluating tearing strength; the quantity to be evaluated is a force, but the instrument actually measures mechanical work. Thanks to a simple and exact relationship, which states that work is equal to the product of force and distance through which the force acts in the direction of the force, the tearing force may be obtained by simple calculation; the calculation has been done once and for all for a predetermined length of tear, and the instrument scale yields readings in grams of force.

The indirectness of the example we have just considered is of the mildest type. Though one might consider an experimental determination to be more indirect if the computations were more complex, the difference is really only one of degree if the working formulae are rigorously correct. Moreover, we may consider the indirectness to differ only in degree if, to evaluate a quantity *A*, it is necessary to make measurements on other quantities *B*, *C*, etc., provided, again, that a known and correct functional relationship exists between *A*, *B*, *C*, etc. However, an importantly different order of indirectness attaches to a method by which a quantity *A* is evaluated by performing measurements on another quantity *B*, when only an empirical relationship exists between the two quantities. This type of method is usually found where it is inconvenient or impossible to perform measurements upon *A*. Several examples of this sort of indirectness present themselves to one familiar with devices for mill control and paper testing. An illustration is found in the method of obtaining opacity (as defined by contrast ratio) from measurements on optical transmittance.

In view of these considerations, we may place the various methods of measurement in three orders, using order of indirectness of measurement as a basis for classification: first order, or direct measurement; second order, or indirect measurement in which the quantity to be evaluated is assigned a numerical value by virtue of a rigorously correct and well established relationship between that quantity and the quantities which are actually measured; third order, or indirect measurement in which the quantity to be evaluated is assigned a numerical value by virtue of an empirical relationship between that quantity and the quantities which are actually measured.

According to this basis of classification, quantities measured by first and second order methods are basic or fundamental; those measured by third order methods may be either basic or of the type which have originated in use requirements. Properties of use may happen, as previously stated, to be basic, and,

naturally, where this is the case, evaluation might be effected with a first or second order method.

There is an important connection between the order of a method and the theoretically attainable accuracy of that method. While it may be difficult in a given particular case to develop a method of the first or second order for the measurement of a basic quantity, nevertheless the possibilities for accurate measurement are unbounded. However, the theoretically attainable accuracy of measurement by a third order method may be good or poor according as the empirical relationship between the quantity to be measured and the quantities actually measured is reliable and accurate or is poor. The importance of third order instrumentation in production control and in testing use properties of the finished product is evidently very great, but it is in connection with instrumentation of this class that one may expect to encounter baffling problems. We may show in a graphical way how basic and hidden errors are involved in a third order method. Let us suppose, as before, that we wish to measure some quantity *A*. To take a typical and simple case, let us also suppose that, to evaluate *A*, we make measurements upon some other single quantity *B;* we choose measurements upon *B* because we anticipate that *B* may vary concomitantly and uniformly with *A*. To test this notion, we set up suitable experimental equipment, make measurements upon *B*, and, if possible, we also make measurements upon *A*. The methods required to evaluate *A* may be of a rather complex nature, and though they may be used in a research laboratory, they possibly would be too complex or costly to be employed in a testing station. Possibly there would be no means for evaluating *A*. In any case, we may consider that some sort of relationship exists between *A* and *B*, and visualize this relationship graphically, as in Fig. 1, where *B* is plotted against *A*. For a given set of similar samples, Curve 1 represents this relationship. For another set of samples of similar grade having appreciably different basic properties, a *different* curve, Curve 2, should be imagined as expressing the relationship between *A* and *B*. Now we recall that in a typical situation, one takes *B* as a measure of *A* without regard for any such hypothetical relationships as those indicated in Fig. 1. The nature of the origin of basic errors will now be

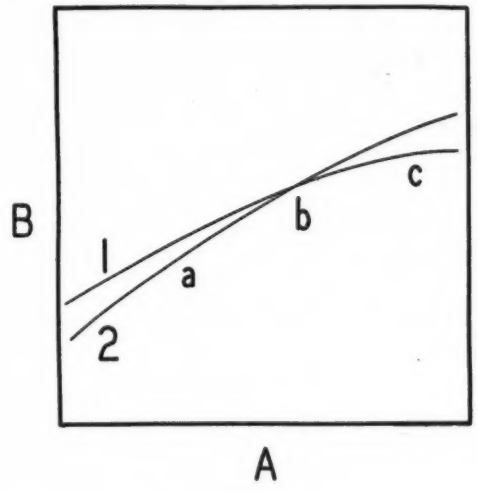

FIG. 1

apparent. Let readings of *B* be taken in the region *a* of the curves, and suppose that equal values of *B* are obtained. Actually (although this would not be evident) the value of *A* for Sample 1 would be smaller than that for Sample 2. The magnitude of the hidden error might be seriously great. If equal readings were obtained in the region *c* above the point *b*, the true *A* values would again be different, and the difference would be reversed.

In this discussion of the hidden errors in third order methods, we have considered a relatively simple case where, for one set of samples, there was a uniform relation between the quantity *A* which we wished to evaluate and the quantity *B* which was actually measured, and for another set of samples of similar grade there was a systematic difference in the various properties of such nature that a *different* but still uniform relationship existed between *A* and *B*. In general, a chart showing the relationship between *A* and *B* for a large collection of samples of similar grade would be a spotty one. One of the several purposes of the instrumentation program is to ascertain, whenever possible, the true accuracy of a method which depends upon a purely empirical relationship between the quantity to be evaluated and the quantity which is actually measured.

A somewhat more complex situation is found in the evaluation of those properties which are not basic but may be defined only in terms of the use of the product. As we have already seen, a use property in general depends upon a plurality of properties for its value, and there is some hypothetical mathematical equation which best expresses this relationship. Now if some instrument is to measure a use property correctly, it must produce a number in accordance with this mathematical function. As an example, let us again consider that complex property known as erasability. Let us also suppose that a large number of observers had come to agreement on how the various properties are to be combined to yield a single-valued measure of erasability. In order that a single instrument might automatically measure this use property, it would have to perform erasure and test the erased portion for writability, or printability, and appearance; moreover, the various properties would have to receive correct weighting. Such a machine would rival the best products of Rube Goldberg's imagination.

There are, of course, many use properties which may be evaluated by testing machines designed to simulate use conditions. There appears to be no alternative to the use of a testing machine where the dependence of the use property on more basic properties is unknown. It is felt, however, that greater advances may be made where investigators seek the dependence of a use property on the various properties which have conceivable relationship, make measurements upon those properties with suitably designed instruments, and then investigate how the data may be combined to evaluate the use property. Thus, to evaluate erasability, it would seem preferable to evaluate independently the various quantities which have been seen to have definite relationship with this property. It should be emphasized that the instrumental values obtained must be properly dealt with. For example, one should not consider smoothness as determined by the air-leak method as a measure of printability, nor should one consider an arbitrary combination of smoothness and oil permeability as a measure of printability. For a given type of printing opera-

tion, printability is related to such factors as smoothness of the surface, ink receptivity, and uniformity of ink receptivity of the surface under pressures of the magnitude involved in the actual printing operation; the relationship between these individual factors and printability will be determined through studies of their correlation with results of printing.

Approach to an Instrumentation Problem

Presented with a variable or property to be measured, one's first work should be concerned with a thorough investigation of that variable or property. If it is not already well defined, a satisfactory definition should be obtained. The success or failure of the whole project will depend upon this phase of the work. This is particularly true in the case of properties which have hitherto been evaluated subjectively. If one is given the problem of measuring "hardness" and assumes that an indentation method could be used, the project is doomed to failure if the term "hardness" has been traditionally misused in description of stiffness.

Following definition of the quantity to be evaluated, possible methods of measurement should be investigated. A method of direct measurement should be chosen whenever possible, for it is an unpardonable sin to make indirect measurement depending on empirical relationships where direct measurement is both possible and feasible. If, as is often the case, a method of third order indirectness is necessary, one should investigate the relationships between all quantities involved, as previously discussed, using existing instruments and improvised research apparatus. In this investigation many samples should be used; they should represent all expected variations of all the quantities relating to the quantity to be evaluated. If the result of this study is a reliable although indirect method, *the field of validity of the method should be clearly stated*, and an estimate of accuracy should be given; again, accuracy refers not to precision or reproducibility of instrument readings, but to accuracy in the evaluation of the quantity which it is ultimately desired to measure. The samples used in this investigation should be of the kind which, in use, are actually to be differentiated from one another. In the past it has been the too frequent practice to justify a method only on the ground that it enables one to obtain substantial numerical differentiation between different grades of paper, e.g., newsprint from mimeograph, mimeograph from glassine, etc. Actually, the makers and users of paper invariably compare samples of similar grade, and it should be obvious that the differences involved in such comparisons are usually very much smaller than are the corresponding differences between different grades of paper. Hence, in the case of a method of third order indirectness, one should not be too optimistic about the accuracy to be expected.

The Instrument

When a feasible and reliable method of measurement has been developed, there remains the relatively simple and straightforward task of designing an instrument in conformity with the adopted method. The most self-evident features of an instrument, such as appearance, ruggedness, ease of operation and general suitability for use in a testing laboratory, and precision, should, in this age of technological enlightenment, be taken for granted. These are important features of an instrument, but the emphasis they usually receive often overshadows or masks more important considerations. The requirement of first importance, which is too frequently forgotten or ignored, is that the instrument embody a scientifically established method and correct principles of operation; the instrument should perform measurement accurately in accord with every detail of the method established for the measurement. Many of us would be willing to overlook the absence of streamlining of the shell of an instrument, and perhaps a slightly defective (but adequate) precision of instrumental readings would be excused, if we knew that the instrument would perform measurement with good accuracy.

This discussion is well illustrated by a certain instrument studied on the instrumentation program sponsored by the American Paper and Pulp Association. This instrument is neat, attractive, easy to operate, and the reproducibility of its readings was found to be well within one per cent. It happens that the methodology of the measurement which this instrument was designed to perform has been well established through many years of careful, scientific work, and hence it was possible to obtain a measure of the instrument's accuracy. In view of all the fine work that had been done in the related field of measurement, it is difficult to believe, but it is nevertheless true, that the basic error in this instrument's readings exceeded twenty per cent. Before the report on this instrument was issued, it had been implied by the producers of the instrument that certain other measurements could be made; in those applications, it was demonstrated that the hidden errors amounted to hundreds of per cent. The situation for this instrument (in its least objectionable application) would not have been so bad if it were not for the fact that purely subjective discrimination in the type of comparisons involved is usually of the order of two per cent or better!

Some of us connected with the instrumentation program contemplate from time to time with genuine regret that the conclusions of so many of our reports are of a condemnatory nature. We cannot escape the conviction, however, that more successful examinations would be passed by instruments if instrument designers investigated more carefully the compatibility of each principle of operation and each detail of design with a properly established and formulated method of measurement. Over a period of years the technical men of the industry, scientific workers, and careful instrument designers have developed a number of good methods of measurement and instruments which have incontestably proved their value in reducing waste, in maintaining uniformity of product, and in aiding research leading to improved products. It is in the interests of maintaining good instrumentation and developing all the potentialities of instrumentation that a thorough and constructively critical study of methods and instruments should be attempted.

Acknowledgments

The writer would not feel in a position to discuss the subject of this paper were it not for the existence of the significantly novel program of research on methods of measurement and instruments which originated in and is sponsored by the American Paper and Pulp Association, and had it not been for many stimulating discussions with his coworkers Philip Nolan, George Sears, and Charles Koon, and with Howard Morgan, formerly a member of the staff of The Institute of Paper Chemistry.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING JULY 1, 1939

SUMMARY

Cigarette paper .....855 cs.
Wall paper .....24 bxs., 2 cs
Wall board .....135 crates, 137 bdls.
Painting paper .....5 bls., 5 cs.
Newsprint .....3,635 rolls, 29 bls.
Printing paper .....66 cs.
Wrapping paper .....1 cs.
Packing paper .....15 bls.
Drawing paper .....14 cs.
Filter paper .....21 cs.
Tracing cloth .....32 cs.
Surface baryta coated paper.....6 rolls, 23 crates
Basic paper .....4 cs.
Crepe paper .....4 cs.
Decalcomania paper .....12 cs.
Decalcomanias .....18 cs.
Tissue paper .....59 bbls., 4 cs.
Writing paper .....1 cs.
Bowl paper .....33 bls.
Paper tubes .....50 cs.
Miscellaneous paper.....664 rolls, 79 pkgs., 59 bls., 78 cs.

CIGARETTE PAPER

Champagne Paper Corp., *De Grasse,* Havre, 510 cs.
De Mauduit Paper Corp., *Normandie,* Havre, 2 cs.
Jay Madden Corp., *Mathilda Thorden,* Helsingfors, 127 cs.
De Mauduit Paper Corp., *Champlain,* Havre, 1 cs.
De Mauduit Paper Corp., *Pr. Harding,* Havre, 215 cs.

WALL PAPER

——, *American Merchant,* London, 2 cs.
S. K. Lonegren, *Gripsholm,* Gothenburg, 24 bxs.

WALL BOARD

H. G. Craig Co., Inc., *A.C.D.,* Donnacona, 135 crates.
——, Milos, *Sundsvall,* 137 bdls.

PAINTING PAPER

Pitt & Scott Corp., *Champlain,* Havre, 5 cs., 5 bls.

NEWSPRINT

Walker, Goulard, Plehn Co., Inc., *Vingaren,* Kotka, 147 rolls.
Jay Madden Corp., *Vingaren,* Kotka, 170 rolls.
——, *Oslofjord,* Oslo, 440 rolls.
N. Y. Evening Journal, *Mathilda Thorden,* Kotka, 453 rolls.
Jay Madden Corp., *Mathilda Thorden,* Kotka, 254 rolls.
H. G. Craig Co., Inc., *A.C.D.,* Donnacona, 314 rolls.
Jay Madden Corp., *Columbus,* Finland, 283 rolls.
H. G. Craig Co., Inc., *Kermic,* Donnacona, 219 rolls.
Jay Madden Corp., *Pr. Harding,* Finland, 616 rolls, 39 bls.
International Paper Co., *International, #1,* Gatineau, 375 rolls.
H. G. Craig Co., Inc., *G.D.D.,* Donnacona, 175 rolls.
Jay Madden Corp., *New York,* Finland, 189 rolls.

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H. Reeve Angel & Co., Inc., *American Merchant,* London, 1 cs.
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FILTER PAPER

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DECALCOMANIAS

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——, *Hamburg,* Hamburg, 50 cs.

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Japan Paper Co., *Yamakaze Maru,* Kobe, 67 cs.
E. H. Sargent & Co., *Vingaren,* Gothenburg, 1 cs.
The Borregaard Co., Inc., *Gripsholm,* Gothenburg, 664 rolls, 79 pkgs., 59 bls.
Keuffel & Esser Co., *New York,* Hamburg, 10 cs.

RAGS, BAGGINGS, ETC.

American Express Co., *Francoma,* London, 5 bls. rags.
——, *Porto Rico,* Havana, 115 bls. rags.
Darvin & Groveman, *Porto Rico,* Havana, 28 bls. cotton & linen rags.
Manufacturers Trust Co., *Mauretania,* Liverpool, 77 bls. rags.
Public National Bank Trust Co., *Mauretania,* Liverpool, 11 bls. rags.
——, *American Shipper,* Manchester, 50 bls. paper stock.
National City Bank, *American Shipper,* Liverpool, 9 bls. rags.
Chase National Bank, *American Shipper,* Liverpool, 1340 bls. bagging.
——, *Beemsterdyk,* Rotterdam, 20 bls. rags.
Atlas Waste Manfg. Co., *Pr. Harding,* Hamburg, 3 bls. rags.
Leopold Katzenstein, *Exiria,* Piraeus, 225 bls. rags.
Chase National Bank, *Tonsbergfjord,* Rotterdam, 60 bls. bagging.
Manufacturers Trust Co., *Tonsbergfjord,* London, 23 bls. rags.

HIDE CUTTINGS

——, *American Shipper,* Liverpool, 352 bags.

OLD ROPE

W. Steck & Co., *Kymo,* Hull, 47 coils.
National City Bank, *Caledonia,* Glasgow, 53 coils.

W. Steck & Co., *Tonsbergfjord,* London, 132 bls.
National City Bank, *American Merchant,* London, 64 bls.

CHINA CLAY

English China Clays Sales Corp., *Mauretania,* Liverpool, 420 bags.

CASEIN

American Cyanamid & Chemical Co., *Western Prince,* Buenos Ayres, 667 bags.

WOOD PULP

Gottesman & Co., Inc., *Milos,* Hernosand, 3600 bls. kraft pulp, 600 tons.
Gottesman & Co., Inc., *Milos,* Sundsvall, 3000 bls. sulphate, 500 tons.
Pulp Sales Corp., *Vingaren,* Helsingfors, 130 bls. mechanically ground pulp.
Pulp Sales Corp., *Vingaren,* Abo, 1200 bls. bleached sulphite.
Castle & Overton, Inc., *Vingaren,* Viipuri, 787 bls. wood pulp.
Pulp Sales Corp., *Vingaren,* Viipuri, 3958 bls. sulphite.
J. Andersen & Co., *Vingaren,* Gothenburg, 975 bls. bleached sulphite.
———, *Bockenheim,* Hernosand, 1140 bls. sulphite.
Central Hanover Bank Trust Co., *Bockenheim,* Hernosand, 600 bls. sulphite.
Bank of N. Y. Trust Co., *Bockenheim,* Hernosand, 810 bls. sulphite.
E. M. Sergeant Pulp & Chemical Co., *Bockenheim,* Hernosand, 300 bls. sulphite.
———, *Bockenheim,* Kopmanholmen, 150 bls. dry chemical pulp.
Bulkley, Dunton Pulp Co., Inc., *Bockenheim,* ———, 125 bls. sulphite.
———, *Bockenheim,* Iggesund, 900 bls. sulphite.
The Borregaard Co., Inc., *Oslofjord,* Oslo, 504 bls. unbleached sulphate.
Irving Trust Co., *Oslofjord,* Oslo, 600 bls. sulphite.
Castle & Overton, Inc., *Maria,* Trieste, 168 bls. wood pulp.
Chase National Bank, *E. Francqui,* Antwerp, 94 bls. wood pulp.
———, *Milos,* Hernosand, 1110 bls. sulphite, 185 tons.
Central Hanover Bank Trust Co., *Milos,* Hernosand, 600 bls. sulphite, 100 tons.
E. M. Sergeant Pulp & Chemical Co., *Milos,* Hernosand, 600 bls. sulphate, 100 tons; 900 bls. sulphite, 150 tons.
Bank of N. Y. Trust Co., *Milos,* Hernosand, 810 bls. sulphite, 135 tons.

WOOD PULP BOARDS

———, *Vingaren,* Viipuri, 418 rolls.
H. Fuchs & Son, *Vingaren,* Gothenburg, 67 crates, 1 cs.
Fibre Case & Novelty Co., *Vingaren,* Gothenburg, 27 cs.
R. Wilson Paper Corp., *Oslofjord,* Oslo, 5 bls.
Jay Madden Corp., *Mathilda Thorden,* Kotka, 100 rolls.

NEWARK IMPORTS

WEEK ENDING JULY 1, 1939

Pagel Horton & Co., Inc., *Milos,* Gefle, 3750 bls. sulphate, 762 tons; 500 bls. sulphite, 101 tons.

ALBANY IMPORTS

WEEK ENDING JULY 1, 1939

Gottesman & Co., Inc., *Bockenheim,* Sundsvall, 540 bls. sulphite.
Gottesman & Co., Inc., *Bockenheim,* Hernosand, 2400 lbs. sulphite.
Pagel Horton & Co., Inc., *Bockenheim,* Sikea, 3000 bls. sulphite.
———, *Bockenheim,* Hernosand, 300 bls. sulphite.
Pagel, Horton & Co., Inc., *Bockenheim,* Kopmanholmen, 1513 bls. sulphite.
———, *Bockenheim,* Kopmanholmen, 1680 bls. dry chemical pulp.
Bulkley Dunton Pulp Co., Inc., *Bockenheim,* ———, 2125 bls. sulphite.
Pagel, Horton & Co., *Bockenheim,* Gefle, 17000 bls. sulphite.
Tradesmans National Bank Trust Co., *Bockenheim,* Norrsundet, 2750 bls. sulphate.
———, *Bockenheim,* Wallvik, 250 bls. mechanical pulp, 2100 bls. sulphite.
———, *Bockenheim,* Sundsvall, 300 bdls. wall board.
Perkins Goodwin & Co., *Bockenheim,* Sundsvall, 1200 bls. sulphite.
———, *Bockenheim,* Iggesund, 2100 bls. sulphite.

BOSTON IMPORTS

WEEK ENDING JULY 1, 1939

———, *Maria,* Trieste, 200 bags hideglue.
Parsons & Whittemore, Inc., *Kellerwald,* ———, 1575 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 1, 1939

Gottesman & Co., Inc., *Vingaren,* Gothenburg, 254 bls. sulphite.
Pulp Sales Corp., *Vingaren,* Helsingfors, 260 bls. mechanically ground pulp.
Jay Madden Corp., *Vingaren,* Abo, 241 rolls newsprint.
Pulp Sales Corp., *Vingaren,* Abo, 155 bls. bleached sulphite.
Castle & Overton, Inc., *Vingaren,* Viipuri, 790 bls. wood pulp.
Jay Madden Corp., *Vingaren,* Viipuri, 49 ctns. wood pulp boards.
Neidich Process Co., *Vingaren,* Kotka, 170 bbls. tissue paper.
Wilkinson Bros., & Co., Inc., *Vingaren,* Kotka, 130 rolls newsprint.
Public Ledger, Inc., *Vingaren,* Kotka, 563 rolls newsprint.
Paper House of Penna., *Vingaren,* Kotka, 38 rolls newsprint.
J. W. Hampton, Jr. & Co., *Vingaren,* Kotka, 59 rolls newsprint.
Jay Madden Corp., *Vingaren,* Kotka, 233 bls. wood pulp boards.
Pulp Sales Corp., *Vingaren,* Kotka, 130 bls. sulphite.
Castle & Overton, Inc., *Vingaren,* Gothenburg, 150 bls. chemical pulp.
The Borregaard Co., Inc., *Vingaren,* Gothenburg, 112 rolls, 43 bls. paper.
Nolan Bowmall & Co., Inc., *Vingaren,* Gothenburg, 80 rolls newsprint.
Perkins Goodwin & Co., *Vingaren,* Gothenburg, 508 bls. sulphate.
Bulkley Dunton Pulp Co., Inc., *Vingaren,* ———, 508 bls. sulphate.
———, *Maria,* Trieste, 501 bls. wood pulp.
———, *Exiria,* Constanza, 1500 bls. wood pulp, 300 tons.

WILMINGTON IMPORTS

WEEK ENDING JULY 1, 1939

———, *Milos,* Wallvik, 4950 bls. sulphite.
———, *Milos,* Iggesund, 1500 bls. sulphite.
Bank of N. Y. Trust Co., *Milos,* Hernosand, 300 bls. sulphite, 50 tons.
E. M. Sergeant Pulp & Chemical Co., *Milos,* Hernosand, 300 bls. mechanical pulp, 50 tons.

BALTIMORE IMPORTS

WEEK ENDING JULY 1, 1939

Pulp Sales Corp., *Vingaren,* Abo, 2166 bls. bleached sulphite.
Castle & Overton, Inc., *Vingaren,* Viipuri, 972 bls. wood pulp.
Pulp Sales Corp., *Vingaren,* Spjutsund, 1360 bls. mechanically ground pulp.
Whitaker Paper Co., *Vingaren,* Kotka, 99 rolls newsprint.
Pulp Sales Corp., *Vingaren,* Kotka, 1480 bls. sulphite.
Bulkley Dunton Pulp Co., Inc., *Vingaren,* ———, 600 bls. sulphite.
———, *Vingaren,* Gothenburg, 53 rolls paper.
Perkins Goodwin & Co., *Vingaren,* Gothenburg, 328 bls. sulphate.
Jay Madden Corp., *Mathilda Thorden,* Kotka, 1313 rolls newsprint.
Wilkinson Bros., & Co., Inc., *Mathilda Thorden,* Kotka, 1452 rolls newsprint.
Pulp Sales Corp., *Mathilda Thorden,* Rauma, 215 bls. mechanically ground pulp, 43 tons; 225 bls. sulphate, 37 tons; 4930 bls. sulphite, 869 tons.
———, *Maria,* Trieste, 592 bls. wood pulp.
———, *Exiria,* Constanza, 1500 bls. wood pulp, 300 tons.

DETROIT IMPORTS

WEEK ENDING JULY 1, 1939

Pagel Horton & Co., Inc., *Harpefjell,* ———, 332 rolls newsprint.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, July 5, 1939.

Sales volume in the wholesale paper market has been maintained at a good level for the spring months and while a decline in manufacturers' sales is expected over the Independence Day holiday, a steady consumer demand continues to keep the production and distribution of paper and paper products at a relatively high level. Sales of manufacturers', including all industries in the group, were 19.2 per cent higher in May of this year than for the like month last year, and jobbers' sales were 11.8 per cent above May 1938. Sales in May were 4.6 per cent above April, in contrast to a decrease of 7.1 per cent from April to May last year. The dollar value of manufacturers sales for May 1939, totaled $332,000,000, compared with $270,000,000 for May 1938, and with $308,000,000 for April 1938.

Dollar sales of paper and allied products, according to the Bureau of the Census, rose 10.6 per cent in May 1939 above May of last year, while writing, book, and some other grades of paper gained 14.8 per cent, paper boxes, 9.7 per cent, and wax paper 10.8 per cent. Printing and allied trades gained 16.2 per cent for the like period.

General wholesale trade reported gains. A group of 52 wholesale trades reported increases to 20 per cent, with dollar sales of $213,143,000, and only three trades reported losses, most of which was in agricultural products. Wholesale paper and paper products sales for May 1939 were 4.0 per cent higher than in April 1939 and 12.7 higher than in May 1938.

The index of general business activity for the week ended June 24, rose to 91.3 per cent, from 90.6 per cent for the previous week, compared with 77.5 per cent for the corresponding period last year.

Paper production of 201 mills for the week ended June 24, was estimated at 75.2 per cent, compared with 78.8 per cent for the previous week, and with 88.6 per cent for the like period in 1937. Paper board production for the week ended June 24, stood at 66.0 per cent, compared with 67.0 per cent for the preceding week, and with 79.0 per cent for the corresponding week in 1937.

No important change in demand or in the market situation of newsprint has been reported at this date. Consumption continues at a relatively low level with May figures showing less than a 2 per cent increase over May of last year, which improvement is less than had been generally expected in the trade. Decline in consumers' stocks is reported by one authority as less than the decline in manufacturers' inventories by some 6,265 tons. Advertising linage in 52 principal cities, for May 1939, was 2.2 per cent above May 1938, against an increase of 1.1 per cent in April.

Wholesale volume as indicated in reports received from many leading manufacturers' representatives, jobbers, and general paper merchants, continued at a good level up to the July 4th holiday. Reports from several quarters in the trade reflect more confidence in the near future, although buying largely continues in relatively small quantities for immediate needs in many lines, and relatively small dealer inventories are generally reported.

Mechanical Pulp

No important change in demand or prices has been reported this week in any grade of mechanical pulp. Prices remain unchanged and conform to prevailing market quotations.

Chemical Pulp

No change in the market situation in chemical pulp has been reported at this date. Since the small decline in quotations on many grades of pulp last week, the market continues relatively firm and demand moderately good.

Old Rope and Bagging

Mill buying of old rope continues to be reported as limited, with prices holding steady at representative quoted market levels. Trading in old bagging continues light and prices are unchanged at prevailing market quotations.

Rags

No important change in the current situation in new or old rags has been reported for the current week. Roofing mills on the Pacific Coast are reported more active in the foreign rag market. Exports of paper making rags for the first four months of this year totaled 2,198 tons, worth $281,943, valued at $50 or more per ton.

Old Waste Paper

Improvement in demand for mixed paper, folded news, and old corrugated, has been reported during last week. Prices remain unchanged on all grades of paper stock, with some expectation of price advances in some quarters of the trade, based upon the steady demand of board mills.

Twine

No important change in the twine market has been reported to date. Prices are relatively firm on all grades of soft and hard fiber twines and no important changes have been reported at this date.

Testimony On Paper Discounts

At the hearing in the action by the Federal Trade Commission against the Book Paper Manufacturers Association, held last week in Washington, C. L. Barnum and C. G. Parker, former directors of the Association, furnished information on the accepted trade discounts, which they stated were in existence before the association was formed in 1933.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, July 5, 1939.

BLANC FIXE—Quotations on blanc fixe continue firm and conform to prevailing market prices. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is quoted at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Prices on bleaching powder continue firm and unchanged at prevailing market quotations. Bleaching powder is currently quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The casein market continues active under a good demand for the current week. Prices are a little higher. Standard domestic casein, 20-30 mesh, is quoted at 10 cents per pound; 80-100 mesh, at 10½ cents per pound. All prices in bags, car lot quantities.

CAUSTIC SODA—Quotations on caustic soda remain unchanged at prevailing market levels. Solid caustic soda is currently quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay continue firm and conform to prevailing market quotations. Imported clay is quoted at from $13 to $25 per ton, ship side. Domestic filler clay is currently offered at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines.

CHLORINE—Quotations on chlorine continue firm and unchanged at prevailing market prices. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market continues to be reported as firm, with prices unchanged for the week. "G" gum rosin is quoted at $4.70; "FF" wood rosin at $4.50, per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is offered at $2.66 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices on salt cake continue firm and unchanged at prevailing market quotations. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is offered at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Prices on soda ash continue firm and conform to prevailing market quotations. Current prices on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.25.

STARCH—The demand for corn starch is reported as good and the market firm. Prices are unchanged for the week. Globe pearl is quoted at $2.55 per 100 pounds; special paper starch at $2.65 per 100 pounds. All prices in bags, car lot quantities, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina continue firm and unchanged at prevailing market levels. The commercial grades are offered at $1.15; iron free at $1.30 per 100 pounds, in bags, car lot quantities, f.o.b., works.

SULPHUR—Prices on sulphur continue firm under a good demand. Quotations are unchanged at prevailing market levels. Annual contracts are quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are offered at $19 per ton.

TALC—Quotations on talc remain firm and conform to prevailing market prices. Domestic talc is currently quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $20 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$4.75	@	$5.25
Superstandard	4.12½	@	4.62½
Northern Standard Wrapping	4.00	@	—
Standard Wrapping	3.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	$0.82½	@	—
White No. 1 M. G.	.80	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.65	@	—
Colored	.77½	@	—
Kraft	.65	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	2.65	@	—
Bleached Toilet	5.26	@	—
Paper Towels—Per Case			
Unbleached, Jr.	$1.75	@	—
Bleached Jr.	3.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	7.75	@	9.75
No. 1 Manila Wrapping, 35 lb.	5.00	@	—
No. 2 Manila Wrapping, 35 lb.	4.75	@	—
Boards, per ton—			
News	30.00	@	32.50
Chip	30.00	@	32.50
Sgl. Mla. Ll. Chip	42.50	@	—
Jute Lined Chip	42.50	@	45.00
White Pat. Coated	55.00	@	57.50
Kraft Liners	45.00	@	—
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1.	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	31.05	@ 36.50	32.20	@ 37.75
85% Rag	.....		29.90	@ 35.00
75% Rag	23.60	@ 27.75	24.75	@ 29.00
65% Rag	.....		21.65	@ 26.25
50% Rag	17.55	@ 21.50	18.70	@ 22.75
25% Rag	14.65	@ 17.75	15.80	@ 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.60	@ $10.50	$9.75	@ $12.00
No. 2	7.70	@ 9.50	8.90	@ 10.75
No. 3	6.75	@ 8.25	7.90	@ 10.00
No. 4	7.00	@ 8.50	8.20	@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.30	@	$12.75
No. 2 Glossy Coated	9.70	@	11.00
No. 3 Glossy Coated	8.60	@	10.00
No. 4 Glossy Coated	8.05	@	9.25
No. 1 Antique (watermarked)	8.05	@	9.25
No. 2 Offset	7.45	@	8.50
A Grade E. F.	7.20	@	8.25
A Grade S. & S. C.	7.45	@	8.50
B Grade E. F.	6.65	@	7.75
B Grade S. & S. C.	6.90	@	8.00
C Grade E. F.	6.40	@	7.50
C Grade S. & S. C.	6.65	@	7.75
D Grade E. F.	6.10	@	7.00
D Grade S. & S. C.	6.35	@	7.25

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	22.50	@	24.00
Dry	22.50	@	24.00
(Delivered)			
No. 1 Domestic and Canadian	29.00	@	33.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.25	@	2.75
Prime Qualities—			
Easy-Bleaching Sulphite	1.90	@	2.00
Strong Unbleached Sulphite	1.70	@	1.90
(On Dock, Atlantic Ports)			
Kraft Bleached	2.50	@	2.75
Kraft Light & Strong	1.50	@	1.60
Kraft No. 1	1.40	@	1.50
Kraft No. 2	1.25	@	1.30
(F. o. b. Pulp Mill)			
Kraft Domestic	1.85	@	1.75
(Delivered)			
Soda Bleached	2.55	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.65	@	6.90
Silesias No. 1	4.50	@	4.75
New Unbleached	6.75	@	7.00
Blue Overall	4.90	@	5.00
Fancy	1.75	@	2.00
Washables	1.50	@	1.60
Mixed Khaki Cuttings	2.25	@	2.50
O. D. Khaki Cuttings	3.25	@	3.40

Old Rags

White, No. 1—			
Repacked	2.90	@	3.15
Miscellaneous	2.10	@	2.25
White, No. 2—			
Repacked	1.50	@	1.60
Miscellaneous	1.25	@	1.40
Thirds and Blues—			
Repacked	1.30	@	1.40
Miscellaneous	1.15	@	1.20
Roofing Rags—			
No. 1	.85	@	.95
No. 2	.67½	@	.77½
No. 3 (bagging)	.55	@	.65
No. 4	.60	@	.65
No. 5A	.60	@	.65

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

J. Andersen & Co.

Selling Agents

21 East 40th Street

New York

CHEMICAL & MECHANICAL PULP

Kraft Pulp

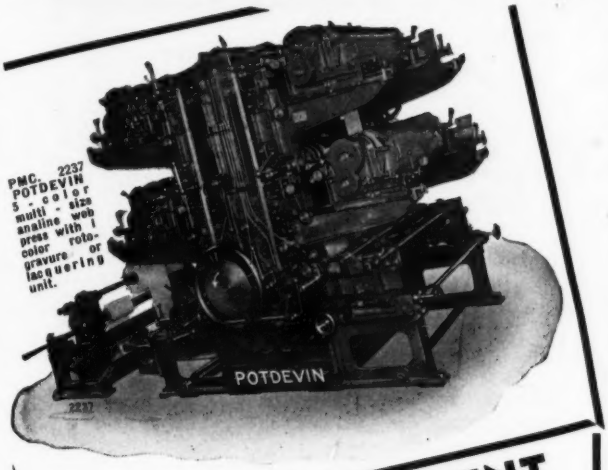
SUNDSVIK OCH ALA NYA AKTIEBOLAG
Södertuna, Sweden
BJÖRK TRÄINDUSTRI AKTIEBOLAG
Vansätfjärden, Sweden
MUNKSUNDS AKTIEBOLAG
Munksund, Sweden
MUNKSJÖ CELLULOSA A.-B.
Spångerfors, Sweden

Bleached Sulphite

HELLEFOSS-VARKENSTOFF PAPER PULP CO., LTD.
Sarpsborg, Norway
Edsvalla, Sweden
Hallsta & Vilbuck, Arvida

Unbleached Sulphite

AKTIESELSKAPET GRÖNER CELLULOSEBRUK
Grenland, Norway
SUNDSVIK OCH ALA NYA AKTIEBOLAG
Södertuna, Sweden
CELLULOSEBRUKS A.-B.
Bredsten, Canada-Skoghall
SVANÖ AKTIEBOLAG
Svanö, Sweden



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MULTI-COLOR
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Numerous POTDEVIN bag machines sold 15 or 20 years ago are still giving satisfactory service.

The same dependable, rugged construction is inherent in every POTDEVIN aniline web press.

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Woolen manufacturers since 1856

ENGLISH ECCO CLAYS

ECCO CLAYS

UNIFORM • SUPERIOR • DEPENDABLE

English China Clays Sales Corporation
551 Fifth Avenue, New York City

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons.	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.75	@	1.90
Domestic	1.75	@	1.80
Wool Tares, light...	1.60	@	1.70
Wool Tares, heavy..	1.80	@	1.90
Bright Bagging.....	1.60	@	1.70
Manila Rope—			
Foreign	2.60	@	2.75
Domestic	2.75	@	3.00
Jute Threads.....	3.00	@	3.25
Sisal Strings	1.50	@	1.60
Mixed Strings....	.55	@	.60

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.30	@	2.40
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.60	@	1.75
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag	.70	@	.75
Solid Flat Book...	.55	@	.60
Crumbled No. 1....	.40	@	.45
Ledger Stock White.	1.05	@	1.15
Ledger Stock Colored	.60	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut....	1.40	@	1.50
New Cuttings.....	1.00	@	1.20
Old Kraft Machine—			
Compressed bales..	.60	@	.65
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue.	.40	@	.45
Strictly Folded....	.27½	@	.32½
No. 1 Mixed Paper..	.17½	@	.22½

Twines

(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.12¼	@	.14¼
White Hemp.....	.13¾	@	.15¼
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09½	@	—
Paper Makers.....	.09½	@	.10½
Tube Rope.....	.10¼	@	.12½
Wall Paper.....	.10¼	@	.12½
Wrapping	.12	@	—
Soft Fiber Rope....	.12	@	.14
Cotton	.16	@	.19

(Hard Fiber)

Medium Java.....	.11	lb	.17
Mex. Sisal.....	.10	@	.16
Manila	.16	@	.23

Domestic	2.65	@	2.75
Sisal Rope	1.75	@	1.85
Mixed Rope.....	.45	@	.50
Transmission Rope..	1.80	@	—
Soft Jute Rope	2.00	@	2.25
Jute Carpet Threads.	.75	@	.90
Gunny Bagging—			
Foreign	1.50	@	1.65
Domestic	1.40	@	1.50
Bleachery Burlap....	2.50	@	2.70
Gunny Bagging.....	1.45	@	1.60
Scrap Burlap—			
Foreign	1.35	@	1.40
Domestic	1.25	@	1.40
Scrap Sisal.....	1.55	@	1.60
Scrap Sisal for Shredding	1.75	@	1.80
Wool Tares, Heavy..	1.40	@	1.50
New Burlap Cuttings	2.25	@	2.40
Aust. Wool Pouches.	2.25	@	—
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging..	.85	@	1.00
No. 2 Bagging.....	.45	@	.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1....	.0675	@	.0690
New Light Flannelettes	.05	@	—
Silesias No. 1.....	.04	@	.04¼
New Black Silesias..	.03½	@	.03¾
Soft Unbleached.....	6.50	@	7.00
Blue Cheviots.....	.05	@	.05¼
Fancy	.02	@	.02½
Washable	.02	@	.02½
Cottons—According to grades—			
Blue Overalls.....	.04¾	@	.05
New Black, soft...	.03¾	@	.04
Khaki Cuttings.....	.02½	@	.03
O. D. Khaki.....	.03	@	.03¾
Corduroy	.02¾	@	.03
New Canvas.....	.06¾	@	.07¼
B. V. D. Cuttings...	.06¾	@	.07

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04¼	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	.90	@	1.05
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments.	2.10	@	2.25
New Silesias.....	3.75	@	4.00

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phil.)

Shirt Cuttings—			
New White, No. 1.	.06	@	.06½
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04	@	.04½
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¾
New Blue.....	.01	@	.01¼
Fancy Percales...	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	@	2.25
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1.....	.90	@	1.10
Domestic No. 1...	.80	@	.90
Domestic No. 2...	.60	@	.65
Roofing Bagging...	.40	@	.45

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	—	@	1.50
Domestic	1.50	@	1.60
Manila Rope.....	—	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.50
No. 2.....	.80	@	.90
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.45	@	.50
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 2 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White.	1.75	@	1.80
No. 2 Soft White.	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.05	@	1.10
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy.	.60	@	.75
Manila Cuttings....	1.45	@	1.50
Print Manila.....	.45	@	.50
Container Manila...	.35	@	.40
Kraft Paper.....	.65	@	.70
No. 1 Mixed Paper..	.20	@	.25
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers.....	.30	@	.35

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White.	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.30	@	—
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.70	@	—
No. 1 Books, light..	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.70	@	1.85
Manila Envelope Cuttings, Extra Quality	2.00	@	2.10
No. 1 Old Manila...	.65	@	.70
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.70	@	—
Mixed Papers.....	.15	@	.17½
Print Manila.....	.45	@	.55
Container Manilas..	.27½	@	—
Old Newspapers.....	.27½	@	.32½
Paper Wool Strings..	.60	@	.65
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated Boxes....	.30	@	.32½
Kraft corrugated boxes	.60	@	.65
Screening Wrappers.	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.50	@	2.65

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.20
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds

Direct mill shipment in two-ton lots

No. 1 White	$35.50	@	—
No. 1 Tints	36.50	@	—
No. 2 White	25.50	@	—
No. 2 Tints	26.50	@	—
No. 2 Golden Rod..	27.50	@	—
No. 3 White	21.00	@	—
No. 4 White	15.00	@	—
No. 4 Tints	16.00	@	—
No. 4 Golden Rod...	17.00	@	—

Direct mill shipment in three-ton lots

No. 5 White	$10.50	@	—
No. 5 Tints	11.50	@	—
No. 5 Golden Rod..	12.00	@	—
No. 6 White	9.00	@	—
No. 6 Tints	9.50	@	—
No. 6 Golden Rod..	11.00	@	—
No. 7 White	8.00	@	—
No. 7 Tints	8.50	@	—
No. 7 Golden Rod..	10.00	@	—
Book—			
No. 1 M. F.	$7.00	@	—
No. 2 M. F.	6.50	@	—
No. 3 M. F.	5.35	@	—
No. 1 S. C.	7.25	@	—
No. 2 S. C.	6.75	@	—
No. 3 S. C.	5.85	@	—

Coated Book & Litho

Ton Lots (resale)

No. 1	$12.00	@	—
No. 2	10.25	@	—
No. 3	8.90	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..)	46.00	@	—
Sheets	54.00	@	—

Pulp

Ground wood.....	$29.00	@	—
Unbleached sulphite.	44.00	@	—
Bleached sulphite...	54.00	@	—
Kraft	50.00	@	—
Soda	54.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.00	@	—
Soft White.....	1.75	@	—
White Blk. News..	1.25	@	1.10
Book and Ledger—			
Flat Magazine and Book Stock (old)	.70	@	—
Light and Crumpled Book Stock.	.60	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue..	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to Mills, f.o.b. Toronto)

No. 1 White Shirt Cuttings	.06½	@	.06¾
Light Prints.....	.03	@	.03¼